

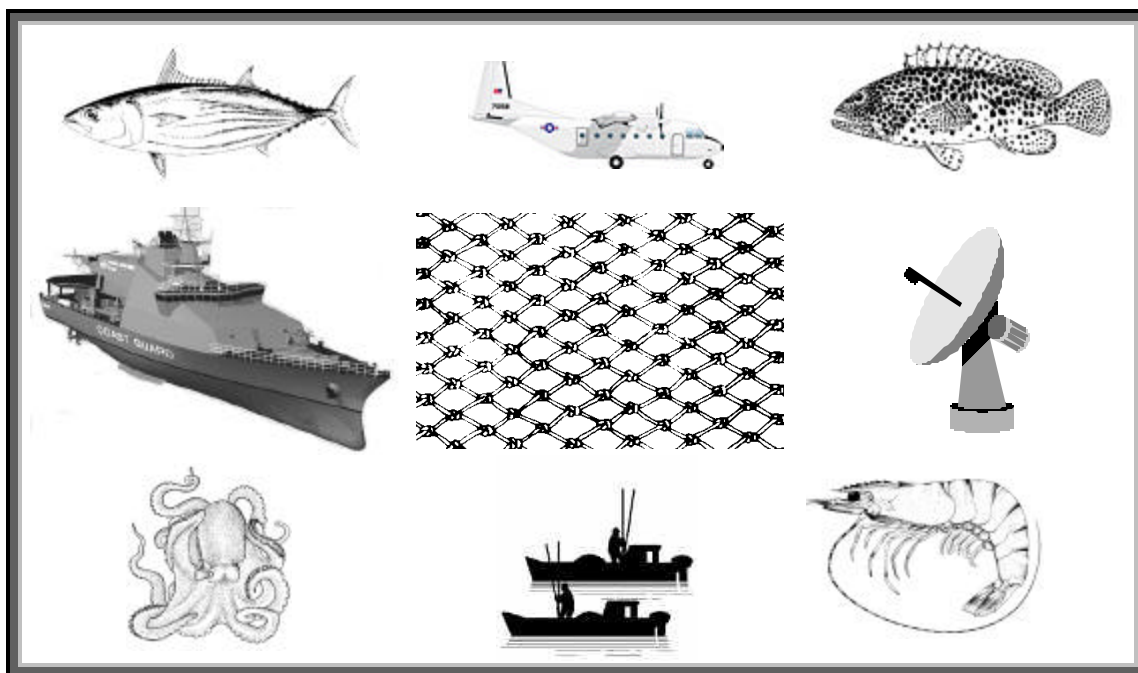


**SUB-REGIONAL FISHERIES COMMISSION
ADVISORY SERVICES FOR FISHERIES MONITORING,
CONTROL AND SURVEILLANCE IN WEST AFRICA
FAO/GCP/INT/722/LUX - AFR/013**



ROBBERS, REEFERS AND RAMASSEURS .

**A REVIEW OF SELECTED ASPECTS OF FISHERIES MCS IN SEVEN
WEST AFRICAN COUNTRIES**



prepared by

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for the

**Sub-Regional Fisheries Commission
Project FAO/GCP/INT/722/LUX (AFR/013)
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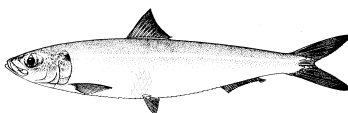
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ACRONYMS AND ABBREVIATIONS

AA	Alta Autoridade
ACP	Africa. Caribbean, Pacific
AFR/013	Luxembourg-funded project
BRD	Bycatch Reduction Device
CEDEAO	= ECOWAS
CL	Comite Local (Senegal)
CL	Comite Local (Senegal)
Code	Code of Conduct for Responsible Fisheries
Compliance Agreement	Agreement to Promote Compliance with International Conservation and Management measures by fishing vessels on the High Seas
DPSF	Direction de Protection et Surveillance des Pêches
DSPCM	Delegation de la Surveillance des Pêches et au Contrôle en Mer
DWFN	Distant Water Fishing Nation
EU	European Union
FFA	South Pacific Forum Fisheries Agency
foreign (fishing) vessel (FFV)	A fishing vessel bearing the flag of a state <u>other than</u> a Member State of the SRFC
GRT/ GT	Gross Registered Tonnes/ Gross Tonnes
ICCAT	International Commission for the Conservation of Atlantic Tunas
LOA	Length over all
Member States	Member States of the SRFC are: Cape Verde, Gambia, Guinea, Guinea Bissau, Mauritania, and Senegal. It is assumed that Sierra Leone will become a member during 2002
PNBA	Parc National de Banc D'Arguin
RIB	Rigid inflatable boat = 'zodiac'
SOCU	Surveillance Operations Coordinating Unit (of the SRFC) = UCOS
SRFC	Sub-Regional Fisheries Commission (or SRFC fr.) Commission Sous-Régionale des Pêches
SRFC Convention on access	Convention relative to the determination of conditions of access and exploitation of the fisheries resources off the coasts of the Member States of the SRFC
SRFC hot pursuit convention	Convention on Sub-Regional cooperation in the exercise of hot pursuit
SRFC surveillance convention	Protocol relative to the practical modalities of coordination of surveillance operations in the Member States of the SRFC
SSB	Single side band (radio)
Sub-regional waters	the waters under the fisheries jurisdiction of the Member states of the SRFC
VMS	Vessel Monitoring System (satellite)

DISCLAIMER

The designations employed and presentation of material in this working paper do not imply the expression of any opinion whatsoever on the part of the FAO concerning the legal status of any country, territory, city, or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

INTRODUCTION

The mission arose from the request of the XIV session of the Conference of Ministers of the SRFC, Nouakchott, September, 2001:

La Conférence des Ministres donne mandat au secrétariat Permanent et à l'UCOS d'engager la réflexion pour que les moyens minimums de surveillance des zones de pêches soient disponibles au niveau de tous les Etats membres de la Commission Sous Régional des Pêches ... et

Etudier les possibilités d'appuyer directement les structures de surveillance des Etats membres dans leurs efforts de réduire les activités de pêche illicite.

The terms of reference for the mission were altered by the AFR/013 project steering committee meeting in Banjul in late March, 2002 following the start of the mission. An additional task was included, namely the preparation of a preliminary proposal for a continuation of the AFR/013 project to be financed by the Grand Duchy of Luxembourg with possible co-funding from other donors. The mission was also extended to cover all seven target countries.

The report is in four parts:

- Part I.** A review of selected MCS issues and ARF/013 activities. The report should not be seen as a project evaluation;
- Part II.** A selective review of existing state of fisheries protection in each country, including comments and recommendations for improvements limited by the short time in each country (2-4 working days); and
- Part III.** An outline proposal for sub-regional development assistance and the continuation of AFR/013.
- Part IV.** A CD containing databases and photographic material of use to the SRFC and SOCU.

MCS is seen as an integral component of the fisheries management regime and the report has addressed management issues of direct relevance to MCS. Due to the brief duration of the mission and time allocated for report preparation, and considering the number of States involved, this study is essentially selective in nature. Particular attention has been directed towards:

- the relationship between the management regime and MCS;
- the question of vessel characteristics (tonnage, or capacity measurement);
- the establishment of the regional register of fishing vessels;
- cost effectiveness of MCS;
- financial sustainability of the fisheries protection activities; and
- sanctions and their application.

Throughout the report recommendations and suggestions for improvements are made, which must be interpreted in relation to the short time spent in each country. As such they should generally be considered as idea for further discussion at national and regional level. Omissions to a certain extent reflect the nature of the information available and the limited time available in some Member States

Among the main sources of regional information upon which this report is based are the reports of the SRFC Coordinating Committee and those of the meetings of the SRFC Ministers' Conferences, the

internal documents, reports and records of AFR/013, consultant reports prepared during the course of AFR/013, various regional workshop reports, and the SOCU databases. The study also draws on the internal records of the various national agencies responsible for fisheries protection, and in particular consultancy reports for Guinea, Senegal, Mauritania (all on MCS) and for Sierra Leone and Cape Verde (on fisheries strategy). The content of these reports is not duplicated and reference should be made to these consultancy reports for further details.

The field work for the mission took place from 25 March to 5 May, 2002, during which time visits were made to Guinea Bissau, Guinea, Sierra Leone, Gambia, Mauritania, Cape Verde and Senegal (in that order). Considerable time was lost due to travel delays, public holidays and communications difficulties. A debriefing took place with the Permanent Secretariat of the SRFC in Dakar. The consultant was not accompanied by a staff member of the SRFC. Future such studies would benefit the involvement of a senior fisheries officer nominated by the Permanent Secretariat.

Acknowledgements

Sincere thanks are due to the Permanent Secretary and Chief Technical Adviser of the SRFC for their assistance, enthusiasm, and forthrightness, to the staff of SOCU for invaluable assistance and insights. The mission could not have been accomplished without the assistance of the staff members of the institutions responsible for MCS, and the military and other associated institutions in the Member Countries and in Sierra Leone. Particular thanks are extended to Mr. M. Sidibé, Mr. A. Ben Aouf, and Mm. C. Dasylyva for their valuable analyses and hospitality. Mr. A. Smith (FAO), A. Richards (FFA), and X. Vincent (Oceanic Developpement) also provided assistance.



PART I. SUB-REGIONAL ISSUES

1. REVIEW OF SELECTED AFR/ 013 ACTIVITIES

This appreciation of the activities of the AFR/013 is not intended to be an evaluation of the project, but an identification of some of the appreciable achievements and the critical constraints facing not only the project, but also the Sub-Regional Fisheries Commission (SRFC). The appreciation is not a comprehensive review, and only selected issues are addressed.

1.1. INSTITUTIONAL SUPPORT TO THE SRFC

The ‘institutional support to the SRFC’ provided by FAO through AFR/013 has had significant impact in assisting the SRFC to make significant contributions to improvement in the region’s fisheries. Among the principal achievement of the SRFC are:

- Issue of a joint ministerial declaration on IUU fishing (Nouakchott Declaration);
- Approval of a Sub-Regional action plan on the conservation and management of sharks and rays;
- approval by the fisheries ministers of a ‘Strategic Action Plan 2002-2010’. This plan incorporates most of the priority actions required under the international instruments¹ to which Member States are party, and responds to the more recent MCS initiatives such as the ‘Déclaration de Nouakchott’ and the ‘Plan D’action Sous régional sur les Requins et les Raies’;
- Establishment of linkages with other regional fisheries and financial organisations, including the regional financial organisations², which act as the ordinators for EU regional development assistance. As part of a future programme, it is suggested that some consideration be given to modernising sub-regional fleets and reducing fishing capacity possibly by using the planned capacity reduction programme in the EU; and
- Publication of a series of newsletters giving greater identity and credence³ to the organisation and its aims.

Other initiatives requiring further study at the sub-regional level include:

- A convention on extradition of delinquent vessels;
- Arrangements for block agreements on foreign fishing and improvement to the existing SRFC Convention on Access;
- The efforts to identify means of achieving greater financial security for the SRFC;
- Securing additional funding for MCS at a sub-regional level;
- Establishing a basis for sub-regional cooperation on VMS (this initiative is already in the planning stage⁴); and
- Programming and implementing the activities described in the SRFC Strategic Action Plan as approved by the Member States.

¹ E.g., the Straddling Stocks and Compliance agreements.

² CEDEAO and UEMOA. See: Afrique de l’Ouest – Communauté Européenne. Document de stratégie de coopération régionale et programme indicatif régional pour la période 2002-2007. Draft 15/04/2002; IRAM, 2001. Etude de la définition des grandes orientations de la politique agricole de l’UEMOA.

³ An official logo for the SRFC should be approved.

⁴ Forthcoming FAO initiative.

However, the impact of SRFC activities has been severely constrained by three factors, all within the powers of the member countries to resolve: finance, geographical location(s), and personnel.

1.1.1. Financial constraints

The current⁵ financial situation of the SRFC is precarious with insufficient funds for staff salaries and ordinary recurrent costs (e.g., telephone, photocopy, fuel for vehicle). This is due to non payment of dues by the Member States. For its minimum functions the SRFC relies on donor-funded project finance, without which it would effectively cease to function.

Studies⁶ on the options for SRFC financial autonomy have had little impact. The very fact that the studies were undertaken highlights the fact that the Member States continually seek means of avoiding direct financial contributions to the SRFC. The conclusions of neither report are supported. The reality is that the Member States must make direct contributions in cash or in kind at least for the core services required from the SRFC.

Member States cannot expect a bankrupt SRFC to be effective if its staff remain unpaid for months and basic communications do not operate. At the same time the SRFC must become more effective and real progress must be made on priority actions.

It is suggested that the SRFC action programme be divided into a set of prioritised (i) core and (ii) supplementary activities. The core functions must be supported by the direct financial contributions, while the supplementary activities are dependent on additional support. In so far as possible, cost savings must be made by the use of Member State assets (meeting rooms, local transport, photocopy services), rationalisation of per diems to affordable levels. Certain projects appear to be created and financed using the support of the SRFC but with little, or no SRFC involvement. Others lend little institutional support to the SRFC and function in relative isolation. Such project need to be more fully integrated into the sub-regional framework.

While tendering and financial administration should meet standards agreed with donor organisations, the imposition of donor accounting practices on SRFC/ SOCU appears counterproductive to institutional development. Resentment has resulted from discrimination regarding the levels of per diem paid during certain activities. This is partly due different financial administration practices.

1.1.2. Geographical considerations

The SRFC is geographically divided in three: the Permanent Secretariat in Dakar, SOCU in The Gambia, and SIAP in Conakry. The geographical distribution of these activities has an essentially political rationale. Other⁷ regional fisheries organisations do not have such geographical separations. This geographical split is premature with a weak central organisation. It undermines synergies and programming, increases costs of coordination, reduces economies of scale in management and travel, and limits building a single strong central organisation with library, web site(s), and unified and prioritised programme of activities. Ideally, all SRFC activities should be concentrated in one location. Member States should ask how they can build a strong SRFC, rather than asking what part of a new sub-regional

⁵ May, 2002.

⁶ Catanzano, J., 2001. Consultation sur l'autonomisation financiere de la SRFC et de l'SOCU. FAO/GCP/INT/722/LUX, and Goebbels, R., 2001. Afrique de l'Ouest. Evaluation politico-economique. Lux-Dev/ AFR/013.

⁷ SEAFDEC is an exception. However in the case of SEAFDEC, different Member Countries host and finance the activities – e.g., Singapore funds the staff, laboratories, and training for fish quality/ quality control, and funds the representation of the organisation at international meetings on the subject.

project can be allocated to them. The location of the SRFC offices means considerable time loss in Dakar traffic and every effort should be made to complete the promised transfer to a city centre location.

1.1.3. Staffing of the SRFC and SOCU

The SRFC/ SOCU requires competent staff who can deliver the services needed by the Member Countries. Staff who are unable to perform must be replaced. Some staff appointments are considered to have been made for 'political' reasons. Staff must be appointed on merit. It is a general principle of appointments in international organisations that the director should not be a national of host country. While not ideal solution, Member States can consider the secondment of staff to the SRFC (i.e., salary payments and possibly housing supplements paid by the Member State). Language is emerging as a problem area with the adhesion of Sierra Leone to the SRFC and the growing use of English in Cape Verde (many Coast Guard officers are trained in the US) and greater use of English will be required in SRFC documents and meetings.

1.2. SRFC /SOCU AND MCS

1.2.1. SOCU as a service agency

SOCU must act as a service agency and be more responsive to the needs of the Member Countries, particularly with regard to information services and organising specialised training. The current level of performance can be substantially improved, in particular the statistical reporting, resolution of the radio/telex communications situation, and preparation of annual operations plans in consultation with Member States.

More effective analysis of existing information is necessary, e.g., with regard to vessels with multiple violations in different EEZs, the comparison of stated GRT of vessels, and the operation of reefer vessels. Comparative information on sub-regional activities can be provided, e.g., payment systems for observers, approaches to evaluating and applying administrative sanctions, levels of sanctions and licence fees. SOCU is also well positioned to indicate where skills and systems developed by one Member State can usefully be transferred to another. Instances include: long range RIB operations in Sierra Leone, MCS administration software in Guinea, patrol vessel management practices and solar powered radar installations in Mauritania, safety at sea for pirogues in Senegal.

Consideration can also be given to establishing a corps of sub-regional observers for vessels which fish in more than one Member State (e.g., tuna vessels) and for support vessels (reefers, bunkers).

1.2.2. Missions and impacts

Aerial surveillance. Based on available records, the aerial surveillance financed by AFR/013 has had no apparent impact on the level of violations. The use of aerial surveillance information to effectively sanction vessels is limited (see country reports). Without the necessary legal, or administrative means of applying sanctions to vessels sighted in violation by the aircraft, the surveillance operations have an extremely limited use and must be supplemented by surface patrols. It is noted that no aerial surveillance was done in Cape Verde and the extent of illegal fishing by tuna vessels in Cape Verde waters is unknown.

Table 1. Comparison of results of aerial surveillance during 1995 -96, 2000 and 2001.

	CV	GA	GU	GB	MA	SN	SL	Total
infractions as % of sightings 1995-1996	8%	19%	59%	9%	4%	1%	2%*	11%
infractions as % of sightings 2000	#	10%	60%	17%	2%	4%	32%	13%
infractions as % of sightings 2001	#	8%	60%	23%	1%	9%	30%	15%

Source: AFR/010 database *Sierra Leone data unreliable for technical reasons. # No surveillance done in C. Verde.

Surface operations. The four joint (bilateral, or multilateral) surface operations undertaken during AFR/013 are considered to have been successful. The success of SRFC/ SOCU in organising a joint surveillance exercise (Lanyi 7) in three countries (Sierra Leone, Guinea, Guinea Bissau) with the patrol vessel of a third (Senegal) and the aircraft of a fourth (Cape Verde) should not be underestimated. This represents a major advance in sub-regional cooperation and while the immediate results in terms of arrests are not substantial, its impact at a political level was significant, and a number of lessons were learned:

- Smaller bilateral operations may be more effective;
- Secure and dependable communications are essential;
- Costs can be substantially reduced;
- The command structure must be 100% clear and uncompromised;
- Basic operational skills are deficient in some countries, including radio operation and communications skills;
- Short surface missions are not cost effective, especially if aircraft and patrol vessels must be displaced long distances;
- Coastal radar to enable additional tracking of targets would be of assistance; and
- Basic information exchange (e.g., lists of licensed vessels) must be timely and complete.

Under the original AFR/013 project proposal the budget allocation for aerial surveillance was inflated with the intention of transferring funds to surface surveillance in the event that potential political and operational difficulties could be overcome. Many of these issues have now been resolved. Senegalese aerial missions funded by the project should wherever possible include The Gambia in the mission plan.

1.2.3. Operational communications

Secure communications between the Member States remains a problem. The efforts to install and operate the radio-telex system have been a disaster and undermine the entire credibility of the project and the SRFC. The task of establishing a secure communications link between the southern countries and SOCU should be handled by one officer without undue interference. Furuno may be more amenable to providing the necessary support if correspondence is signed by the President of the SRFC. Any payments should be contingent upon results, i.e., the equipment must be made operational before payment. It can be noted that the radio-telex on Mauritania's vessels is not operational and while the equipment differs some cooperation and exchange of views may be of use. The low level of participation by Guinea Bissau in Lanyi 7 indicates substantial communications problems. Lack of communication incurred substantial additional costs for the aircraft (e.g., Bissau airport control was not operational) necessitating another flight back from Gambia.

1.2.4. Implementing the IUU IPOA

The SRFC Conference of Ministers has already endorsed the International Plan of Action International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IUU IPOA). The following Box highlights some articles under which joint actions may be envisaged:

- Under Art. 38 and 40 agreement may be sought between Member States on the operation of vessel (flag) registers and fishing vessel registers, including means of sharing information⁸, verifying tonnage, or other vessel characteristics, and identifying possible reflagging to avoid compliance. A meeting of register controllers may be of use in this regard.
- Under Art. 48 sub-regional pressure may be applied to gain access to vessel unloading manifests in the port of discharge, particularly for Las Palmas;
- Art 66 is particularly difficult to enforce, but consideration may be given to harmonising the minimum commercial sizes of certain species, in particular those under threat (e.g., groupers);

⁸ Mauritania records the former names of vessels.

- Under Art. 88-91, the SRFC may solicit FAO assistance for a range of activities.

Box 1. Selected articles from the IUU IPOA

38. Flag States should deter vessels from **reflagging** for the purposes of non-compliance with conservation and management measures or provisions adopted at a national, regional or global level. To the extent practicable, the actions and standards flag States adopt should be uniform to avoid creating incentives for vessel owners to reflag their vessels to other States.

40.(extract)..Flag States should ensure appropriate links between the **operation of their vessel registers** and the record those States keep of their fishing vessels. Where such functions are not undertaken by one agency, States should ensure sufficient cooperation and information sharing between the agencies responsible for those functions.

48. Flag States should ensure that their fishing, **transport and support vessels** do not support or engage in IUU fishing. To this end, flag States should ensure that none of their vessels re-supply fishing vessels engaged in such activities or tranship fish to or from these vessels.(extract)

66. States should take all steps necessary, consistent with international law, to prevent fish caught by vessels identified by the relevant regional fisheries management organization to have been engaged in IUU fishing being **traded** or imported into their territories.(extract)

Role of FAO

89. FAO will, as and to the extent directed by its Conference, support development and implementation of national and regional plans to prevent, deter and eliminate IUU fishing through specific, in-country technical assistance projects with Regular Programme funds and through the use of extra-budgetary funds made available to the Organization for this purpose.

90. FAO should, in collaboration with other relevant international organizations, in particular IMO, further investigate the issue of IUU fishing.

91. FAO should convene an Expert Consultation on the implementation of paragraph 76 of the IPOA. [76. Certification and documentation requirements *(for trade)* should be standardized to the extent feasible, and electronic schemes developed where possible, to ensure their effectiveness, reduce opportunities for fraud, and avoid unnecessary burdens on trade.].

92. FAO should investigate the benefits of establishing and maintaining regional and global databases, including but not limited to, information as provided for in Article VI of the 1993 FAO Compliance Agreement.

1.3. A SUB-REGIONAL REGISTER AND VESSEL INFORMATION SYSTEMS

Three initiatives⁹ have been taken to promote the establishment of a regional register of fishing vessels: a regional consultation, a draft convention, and a study to establish the state of the national fishing vessel registers (under way May, 2002). For several reasons none of the initiatives are considered effective. This section¹⁰ attempts to assess the difficulties foreseen in the current approaches and to propose alternatives.

The nature of a regional register remains unclear within the sub-region. Both the consultation and the draft agreement fail to make a clear distinction between two closely related but entirely distinct items:

- a) **A vessel information system.** A sub-regional database of vessels (and other databases of interest, such as of delinquent vessels, captains and owners of delinquent vessels); and

⁹ SRFC, 2001. Rapport final de la consultation technique sur la mise en place d'un registre sous-regional des navires de peches. Banjul, Gambie 02 - 04 avril 2001. CSRP, sans date, Avant-projet d'accord portant etablissement d'un registre sous-regional des navires de peches industrielle operant dans les eaux sous juridiction des Etats Membres de la SRFC.

¹⁰ Particular attention needs to be given to the accuracy of any translation of this section to either French, or Portuguese, as poor translation can lead to even further confusion.

- b) **An international legal instrument = the Sub-Regional Register.** A sub-regional legal instrument that can be an effective deterrent to illegal fishing, particularly for vessels which have a sub-regional dimension, i.e., for vessels with respect to which the legal authority, or powers of any one Member State is insufficient to counter, or deter their illegal activities.

The nature, structure, function and operation of each of these two items will be discussed below. The relationship between both will be specified. Though useful, the study of national vessel registers does not address the matter of the sub-regional register.

1.3.1. The Sub-Regional Register

The Sub-Regional Register (SRR) is a legal instrument created by agreement between the Member States to improve Member State control over fishing vessels. The objective, intent, and mechanics of the SRR are the essential considerations. The list of vessels and the precise information required regarding each vessel are technical details.

The power of the legal instrument depends entirely on the agreement of the participating Member States to refuse a fishing licence, and/or reflagging to a vessel which is considered to be 'irresponsible'. Determining that a vessel is irresponsible is an essentially a political decision based on agreed criteria.

It is not necessary to have all industrial vessels on the register as recommended by the technical consultation¹¹. There are fundamental reasons why the original Directive No. 3² did not specify all industrial vessels. These reasons were apparently not considered and appreciated by the consultation:

- The essential targets of the SRR are the vessels which escape the effective control of any one Member State, i.e., vessels with a 'sub-regional dimension'. This group of vessels includes (i) all foreign flag vessels (i.e., non-Member State-flag), and (ii) all Member State-flag vessels which fish in more than one Member State.
- If a Member State vessel fishes only in the waters of its flag State there is no reason to require the vessel to be on the SRR and subject to international controls. The flag state normally has adequate legal powers to effectively control such a vessel's operations. As a legal instrument, the SRR does not provide any additional powers over such a vessel. However, this does not mean that information on such a vessel cannot be made available through the SRFC to other Member States (see vessel information system, below).
- Requiring all industrial vessels to be placed on the SRR unnecessarily complicates the register and adds an unproductive administrative burden for both the SRFC and the national authorities;
- Establishment of a SRR does not substitute for the need to have accurate information on fishing vessels at the national level. The SRR initiative should not be seen as a project to set up national registers, but as a legal mechanism to improve sub-regional control over a limited group of vessels, which no single Member State can adequately control.

A revised draft SRR convention is attached (see Annex I). The essential points are provided in a set of relatively simple articles. The technical details are separated into annexes to allow for ease of modification on a number of potentially controversial points. The counterproposal is made in an effort to rectify the

¹¹ Directive n° 3: Il est recommandé de modifier cette directive afin que tous les navires de pêche industrielle et tous les navires congélateurs impliqués dans les opérations connexes de pêche soient inscrits dans le registre et ce quel que soit leur nationalité.

¹² Extract from AFR/013 "The register will be limited to vessels flying the flag of non-member States and those vessels flying the flag of the member States and licensed to fish in States other than their flag State."

weaknesses foreseen in the existing 'Avant-projet'. The proposal draws heavily on the solutions developed over many years in the FFA area¹³. Four main weaknesses can be identified in the avant-projet:

- a) **Too many objectives.** Only the fifth objective is relevant ('contrôle des activités des navires de pêche industrielle au niveau de la sous région'). The other objectives pertain to a vessel information system.
- b) **Multiple criteria.** The proposal effectively means 6-7 sets of national criteria for vessel registration and removal of 'responsible' status.
- c) **Lack of precise target.** It is not necessary to include all industrial fishing vessels but only those which have a sub-regional dimension, e.g., foreign vessels, or vessels which fish in the waters of more than one Member State. Member State flag vessels which only fish in the flag Member State are, in principle, under the full control of the flag state.
- d) **Unclear procedures.** Inscription / registration procedures and those for the removal of responsible status remain unclear.

To be an effective sub-regional legal instrument, a sub-regional register cannot be compilation of national registers. This path is a recipe for confusion with 6-7 sets of national criteria which can never be fully harmonised.

1.3.2. Vessel information systems

The SRR must not be confused with a sub-regional vessel information system. A sub-regional register will use an information system to function and this information can be of use to the Member States, but the SRR is not an information system. It is a legal instrument. The SRR information will pertain essentially to the vessel, its characteristics and ownership and its status as a responsible, or delinquent vessel. It will not contain details of its fishing operations, or sightings by patrol craft.

A more comprehensive fishing vessel information system will improve sub-regional fisheries management and MCS. The SRFC can establish and manage such a system as a service to the Member States. Several related databases can be envisaged as part of this information system:

- Vessel characteristics and ownership for all industrial fishing vessels and for other vessels supporting the fishing operations, including reefers, bunker vessels, canoe support vessels, and fleet supply vessels. The information currently exists in separate files sent by Member States to SOCU, but is not compiled in a user-friendly form which can be queried, or sorted;
- List of vessels currently licensed. Some of this information also exists in SOCU in separate .dbf files by Member State. It is not crosschecked, or used for analysis;
- Information on violations, including reported violations where no arrest was made, and including information on the penalties and sanctions imposed and paid. Part of this information is available in SOCU. However, little or no information is compiled on sanctions;
- List of delinquent fishing vessel captains. This information is not available at sub-regional level;
- Inspections/ sightings (a SOCU database already exists for aerial sightings); and
- EEZ entry and exit reports.

The SRFC can provide a useful information service to Member Countries by consolidating and analysing information on the fishing vessels operating in the region. Of particular interest are the following analyses:

- crosschecking of vessel licences;
- crosschecking of vessel tonnage and similar characteristics;

¹³ See, e.g.: Procedure for the operation of the VMS register of foreign fishing vessels; Nauru Agreement Subsidiary Arrangements.

- crosschecking of vessel entry and exit reporting between Member States;
- records of violations of different vessels, or vessel owners (see following Box); and
- information on the beneficial ownership of vessels.

As indicated above, some of this information is already available in the SRFC/ SOCU, but is not being exploited effectively¹⁴. A preliminary analysis of some of the information contained in the SOCU databases, and additional information collected during the mission is provided in this report. There are several reasons why the existing information is not effectively used:

- The existing database management software is 'closed', i.e., it cannot be modified without access to the source code¹⁵ which is not in the possession of SOCU, despite a discussion regarding this necessity with the AFR/010 project staff and the software author while the AFR/013 project was in preparation;
- The software was designed for Mauritania and its core units are oriented towards surveillance and records of violations, rather than vessels and do not readily allow comparisons between the different country fishing licence databases;
- The existing SOCU staff lack the necessary software skills (e.g., programming ability in dBase, Access, or Excel expertise) and are unable to make the necessary analyses. Consequently the available information is largely underexploited; and
- There are problems with the software in some countries (e.g., Sierra Leone) and staff often have to re-enter existing licensing information (i.e., most countries use their own vessel licensing software, which may be in Access, Excel, or even in Word).

Substantial upgrading of the information management and analysis capabilities of SOCU is required. Improvement in the transfer of information between countries is necessary, either by zip drive units, or preferably by CD writers. By working closely with Member States means can be found to avoid the need for Member States to re-enter¹⁶ the data required at the regional level. Member States need to compile additional information on the activities of the support vessels (reefers, bunkers, supply vessels) as these vessels enable certain fishing vessels to avoid port inspections and effective control of catches. A preliminary analysis of this fleet is presented in this report.

¹⁴ The information system must be seen not as static tool, but an instrument which must constantly be adjusted and modified to meet the needs of the users, requiring a capability to rewrite software code to respond to the changing requirements of the fisheries.

¹⁵ Any future software development contracts must stipulate that the SRFC is the owner of fully documented source code. The source code is in fact available in Mauritania. The SRFC should officially request Mauritania to contribute the source code to the SRFC.

¹⁶ Existing tabular data can be transformed into a dbf file with similar field names and verified prior to transfer to SOCU.

Box 2. FFA Violation and Prosecution (VAP) database

The following information is managed using the VAP database:

- All violation details, including vessel and captain involved, date and time of the event, category of the offence committed, amount of catch involved, who observed and reported the incident etc.;
- Current status of the violation case as well as the case history;
- Details of the outcome of the violation case, including the type of outcome, fine imposed, whether vessel, gear or catch were forfeited etc.;
- Definition of standard categories of violations and types of violation outcomes; and
- Details of prosecution cases, including date, location, court and judge, the defending individuals and organisations, verdict, fines that were imposed etc.

Role and objectives of the VAP database:

- Recording and maintaining data for individual violations and their outcomes;
- Recording and maintaining data for prosecution cases;
- Standardisation of violation types and their outcomes;
- Classification of prosecution cases for easier reference by legal professionals;
- Possibility of identifying frequent offenders; and
- Establishing a reporting and analysis mechanism that provides answers to various queries.

Source: FFA

1.4. OTHER COMPARATIVE INFORMATION AND INFORMATION PROVIDED ON CD

A range of additional compilations and comparisons of country information is likely to yield further benefits and insights for MCS development in the sub-region. Three subjects in particular are of interest: training opportunities; patrol vessel costs; and control of artisanal fisheries.

Human resource development. A wide range of training opportunities are available both within and outside the sub-region. A comprehensive inventory of the courses and practical training opportunities can be established. Similarly an inventory¹⁷ of training needs and priorities can be established with a view to matching training needs and opportunities at a sub-regional level. In parallel to this process the contacts with national and overseas training institutions can also identify possible sources of funding for human resource development. An archive of such training opportunities can be held by the SRFC with a view to informing Member States and their institutions, possibly by providing the information and relevant links, or contact information through a web site. Additionally funding can be sought for staff exchanges and secondments within the sub-region. The MCS Operations Manual (English version) prepared by SOCU is an extremely useful compilation of information and requires accurate translation into other sub-regional languages.

Recurrent costs of patrol vessels. The operating cost of patrol vessels is the single most important MCS cost item in all countries. Comparison of the costs with a view to identifying cost savings, cost-effective patrol systems, and cost-effective patrol vessels is of considerable interest. In particular analysis of successes and failures of patrol vessel management systems, and identification of specialist repair and maintenance skills in the sub-region may be of value.

Control of artisanal fisheries. While there is considerable variation in the artisanal fisheries throughout the sub-region, control of these fisheries and the 'semi-industrial' fisheries is likely to be an issue of

¹⁷ Some progress has already been made. See: Secretariat Permanent, 2000. Rapport de la reunion ad hoc sur la preparation d'un plan de formation en matiere de surveillance des peches. SRFC

growing importance. Exchanges of experience in co-management, in establishment of effective controls at local level, and making scientific advice meaningful at the local level are of interest.

Information provided on CD. Several of the databases and archives are included on the CD provided as a supplement to this report. These are:

- the database of industrial fleets operating in the sub-region;
- a database of the ramasseurs, reefers, bunker and supply vessels (see section 3.3 for summary tables and description);
- database of violations and sanctions for the region;
- call sign query database;
- photographic archive of patrol vessels operating in the region; and
- an archive of photographic material of use to the SRFC.

2. FISHERY MANAGEMENT AND MCS

MCS is seen as one component of the fishery management regime. The management measures and regulations determine the nature of the MCS tasks. The ability of the fisheries administration to determine effective management measures and to enforce them is an important consideration. This section examines the logic, or rationale used to determine selected management measures in the context of MCS.

2.1. RESOURCE ASSESSMENT, FISHERY MANAGEMENT DECISIONS AND PLANS

2.1.1. Management plans

Most Member States do not have fishery management plans¹⁸ for their industrial fisheries. Fishery management decisions are often based on broad sector objectives (e.g., increasing local food supply, maximising foreign exchange receipts, creating employment), rather than on specific fishery-related considerations. Management plans are required for each major fishery. The Technical Guidelines for Responsible Fisheries 4. Fisheries Management, Table 4 suggest a content for a management plan. In terms of content, however, the level of detail is not the priority, but a clear statement of (a) the long-term vision for the future of the fishery and (b) the steps and measures to be used to achieve that vision. In particular management plan should have solid political support, consider the enforceability of measures and regulations, and make provision for recurrent and capital funding of MCS. Implementation is the measure of the plan's success, rather than the preparation of an elaborate document. Guinea's Plan de Pêche provides a sub-regional example of a relatively simple and practical generic plan for the key industrial fisheries.

2.1.2. Assessments of resource potential

In the sub-region resource assessments tend to be used in a 'classical' manner. In accordance with the LOS Convention, an estimate of the MSY is made. A priority allocation is set aside for the artisanal fleet and for the national industrial fleet, and the biological surplus is allocated to the foreign fleets operating under charter, or access agreements.

¹⁸ Guinea is an exception. Guinea prepares an annual 'fishery plan' on a fishery by fishery basis.

The resource assessment estimates tend to be used to directly determine the available fishing opportunities, i.e., the estimate of biological resource potential (=MSY) is frequently used to directly estimate the number of fishing licences which can be issued 'on the basis of scientific (biological) advice'.

This is a misuse of the resource assessment, as this biological surplus bears little relationship to the economically exploitable stocks available. When recorded catches fall short of the MSY-based 'resource potential' there is a tendency to issue additional licences, or for unprofitable vessels to increase effort, to catch and retain ever smaller grades of fish, or violate regulations to maintain profitability.

The general philosophy of 'allocating the biological surplus', which is also the basis for access agreements tends to contribute to the pressure on resources. The solution advocated is 'more, or more accurate resource assessment', although it is clear that throughout the sub-region almost all demersal stocks and most stocks of large pelagics are overfished. Demands for further more accurate resource assessments simply postpone hard decisions on reducing the fishing effort, or number of licensed vessels.

The idea of biological potential must be complemented with the concept of economic potential as a basis for determining the maximum fleet capacity. The (biological) resource assessments must be complemented by assessment of the profitability of the fishery and the inclusion of an economic dimension in basic fishery management plans. Used in isolation, the estimate of biological potential may well be a cause of overfishing, rather than a contribution to rational management. If vessels are profitable there is less need to violate fishery regulations, reducing some of the MCS problems. If vessels are profitable they can pay higher license fees and make a greater financial contribution to the cost of managing the fishery.

2.1.3. Timely scientific advice, indicators and decisions

The biological advice produced in the sub-region is often of marginal use for management decisions. There are two closely related reasons for this:

- The scientific research programmes are not directly relevant to the fishery management decisions, and
- Fishery managers may not ask the right questions of the scientists, or ensure that the scientific institutions have the resources to provide answers to specific questions.

There is no substitute for basic scientific research on fish biology, ecology, population dynamics, and oceanography. However, resource assessments may not necessarily show why a particular species is overexploited, or what measures can be taken to prevent over-fishing.

What is the state of the fishery today? Few Member States have information on the current state of their fisheries. In several institutions in the region industrial fishing vessel logbooks submitted several years ago are being computerised, i.e., the scientific advice is years behind the reality. Much of the research is a historical exercise and is incapable of describing the current situation in the fishery, much less projecting its future, other than on the basis of a time series and a production curve, which may have limited application, given the changes in species composition, in predator prey relationships, or in environmental conditions.

Even in the best of situations aggregate catch data on industrial fisheries is months old. Typically¹⁹ aggregate catch information is compiled from logbooks submitted at the end of a 2 month voyage. Total catch for the first trimester may be available in late June. This leads to situations such as in Guinea, where

¹⁹ Sénégal and Mauritania have the shortest timeframes.

the catch of demersal finfish exceeded the TAC recommended in the management plan by 230% in 2001, partly because there was no 'near real time' knowledge of the catch. With short-lived species such as shrimp and cephalopods, the relevant time series is measured in months and not years and management measures (e.g., determination of closed season, closure of a fishing zone) need to be based on knowledge of the current state of the fishery. To partly resolve these problems the following approaches are suggested:

1. Timely advice. All vessel operators be obliged to submit basic catch information by vessel and by species group every 10 days in a simple form which can readily be aggregated.

2. Simple indicators. Resource and stock assessments are costly and infrequent, and there can be substantial delays between the data collection and final results. Basic indicators can provide an insight into the state of the stocks and the broad trends of the fishery. Some reference points provided in the CCRF Technical Guidelines 8 are data-heavy, i.e., they require considerable investment in data acquisition and analysis. For these reasons they may not be suitable for all fisheries, especially multispecies fisheries, artisanal fisheries, and for those with a limited research budget and scarce human resources.

3. Dialogue with industry. Vessel operators are among the first to detect changes in the fishery and to adjust their fishing behaviour accordingly. The fisheries administration must make use of their timely information, experience, and proposals to refine and adjust management measures to changes in the fishery. As a minimum, an informal mechanism for dialogue with the industry on the state of the resources should be in place.

Table 2. Example of simple 10-day summary catch record form for shrimp trawlers to be sent by fax, or mail to fisheries agency and company reporting control sheet

Name of operator:	Month (1-12):	10 days (1-3):				
<i>Penaeus notialis</i>	Other shrimp	Grade 1 fish	Grade 2 fish	By-catch	Other	
Vessel 1 / code						
Vessel 2 / code						
Vessel 3 / code						
.....						
Name:	Signature:	Date:				

Catch record control sheet showing submission/ non-submission of catch data for each 10-day period

Vessel operator	Vessel	Jan	Feb	Mar	Apr	May
Company 1	Vessel 1	x x x	x x x	x x x	x x x	x x x	
	Vessel 2	x x x	x x x	x x x	x x x		
	Vessel 3	ooo out of operation ooo			x x x	x	
Company 2	Vessel 1	x x x	x x x	x x x	x x x	x	
	Vessel 2	x x x	x x x	x x x	x x x	x x	

4. Spatial distribution of resources. As a result of cruises, trial fishing, bottom sampling, and analysis of catch information, substantial information exists in each Member State on the spatial distribution of commercial fishery resources. Some Member States have prepared charts of the distribution of the resources, showing seasonal, or other (e.g., lunar) variations. Such charts can be of direct use for planning surveillance, for addressing zoning issues, and for determining changes in the distribution of species. Some attention can be directed towards the use of GIS systems to rapidly convert catch information to more user-friendly graphical presentations.

2.2. DEALING WITH ILLEGAL TRAWL MESH

The most common violations recorded in the sub-region are: (i) trawl mesh violations (including illegal mesh size, double mesh, and other means of rendering the mesh size regulations ineffective) and (ii) zone violations. The following table provides an example of the extent of the trawl mesh violations.

Table 3. Most frequent types of violations as % of total violations prosecuted (Sénégal), or % of vessels observed in violation (Guinea)

Member State/ Violation	Prohibited zone	Trawl mesh
Guinea	37% of vessels	92% of vessels
Senegal	51% of violations	23% of violations

Sources: CNSP observer data, DPSP infraction database (1991-2001).

The ability of the fisheries authorities to detect illegal trawl mesh is extremely limited. In particular, the use of double mesh, or rigging of the trawl to ensure a smaller mesh aperture is difficult to detect without increased boarding at sea. Information from observers in Guinea gives a further estimate of the extent of the problem. Of 92 vessels in the sample 85 used illegal mesh. For 11 of the 17 companies in the sample all company vessels used illegal mesh.

Mesh controls appear to be ineffective in many Member States. In Guinea, with a 92% frequency of use of illegal mesh only 4 convictions for illegal mesh were achieved in 2001 and in each case the arrest was associated with another type of violation. In Senegal more than 50% of the arrests made for illegal mesh were based on quayside inspection, while at sea inspections represents a coverage of approximately 1% of the fishing effort (at-sea boardings as % of total estimated industrial vessel fishing days). The use of illegal mesh at sea cannot necessarily be detected by in port inspections.

The inability of the fisheries authorities to enforce mesh size regulations is such as to question the utility of these regulations, in particular if a number of different mesh sizes are authorised in the fishery, or for a given vessel. Several measures can be considered:

- Use of a single unified mesh size for all fisheries, e.g., 60-65 mm for shrimp, cephalopod and finfish trawl fisheries. This has a close relationship with the following section on by-catch which presents a further enforcement problem.
- Use of the different mesh sizes in association with zone regulations as is done in Senegal. This requires that some areas are reserved exclusively for shrimp fishing, others for finfish, cephalopods, etc. The definition of fishing zones may not be as easy as in Senegalese waters, and seasonal changes in resource distribution may prevent such definition. However, a cooperative effort with vessel operators may succeed in defining realistic zones. The question of zone enforcement is addressed below.
- The third solution, which is strongly advocated is to initiate the use of grids for demersal trawlers, preferably as a general principle for all trawl fisheries, and particularly for the shrimp trawlers²⁰ which tend to fish closer inshore. The industry should show reason why it does not need to use them for certain fisheries (e.g., those with a particularly low by-catch).
- The final, but more costly approach is to substantially increase the numbers of at sea inspections, particularly surprise inspections during which the vessel is instructed to keep the trawl in the water until the fisheries officer is on board.

²⁰ See: Broadhurst, M. K., 1999. *Modifications to reduce bycatch in prawn trawls: A review and framework for development*. Reviews in Fish Biology and Fisheries, 10: 27-60, 2000.

2.3. ENFORCING REGULATIONS ON BYCATCH AND DISCARDS

Several types of violations of bycatch/ discards regulations occur in the sub-region. Recorded violations are not necessarily classified as infringement of bycatch regulations, but are often classified as ‘catch of prohibited species’, or an excessive percentage of shrimp in the catch of vessels with a demersal finfish licence. Bycatch and discards frequently represent over 60%²¹ of the catch and the high level of discards is of concern to the fisheries authorities and the artisanal fishing communities. Demersal finfish trawlers²² are normally obliged to respect a limit on the proportion of shrimp, or cephalopods in the catch (or catch retained on board), while shrimp vessels using a 40mm mesh frequently target valuable finfish resources if shrimp fishing is poor. Changes in ‘normal’ catch composition may also render current bycatch regulations impractical.

Given that most of the demersal trawl fisheries are multispecies fisheries, bycatch and reject regulations are difficult to apply and enforce as the vessels inevitably catch unwanted fish. Several measures can be considered in an effort to avoid enforcement of unworkable regulations:

- a) The introduction of bycatch reduction devices (BRDs) as already suggested above;
- b) The introduction of economic incentives by charging for bycatch in the licence fee. The charge would reflect the average bycatch for the fishery and be monitored by the on-board observers. Charges could be reduced, or removed for vessels using BRDs, or for reductions in the fishery’s average bycatch;
- c) Continued monitoring by observers in association with serious scientific study on the relationship between trawl by-catch and artisanal fisheries²³;
- d) Institutional arrangements and incentives for collection²⁴ of bycatch by artisanal vessels with a view to processing at an artisanal level;
- e) Possible ‘active’ zoning based on observer reports, research cruises and catch data, e.g., areas with high catches of juveniles could be closed temporarily to trawling;
- f) Ensuring that the mesh size regulations and the minimum marketable fish size regulations are compatible, and that the minimum sizes are greater than size at maturity (in so far as possible in a multi-species fishery).

2.4. ENFORCING FISHING ZONE REGULATIONS

In the sub-region closed areas, or zones are created for two principal reasons: to protect artisanal fishing grounds, or to protect breeding and nursery areas. Protection of the artisanal fishing grounds is common throughout the sub-region, while zoning for resource conservation purposes is more restricted. Almost all of Senegal’s continental shelf is zoned. Mauritania, which already has a relatively complex zoning system is in the process of revising its zone regulations with a view to expanding the area reserved for artisanal fishing. A number of areas of high biological value (e.g., Banc D’Arguin, Sine Saloum) are subject to comprehensive restrictions on fishing activities. Creation of additional marine protected areas and marine parks is under discussion (Bisagos Archipelago, Saly).

²¹ Pers. Comm. CRODT and examination of observer reports for Senegal, Guinea, Mauritania.

Diakit , ITA, Dakar has indicated a range of 42-55% for shrimp trawlers in Senegal.

An EU/ Senegal study carried out in 1995 indicated average values of discards as 0.24-0.40 US\$/kg, depending on the fishery, giving an estimated value of 1.8 million US\$ for the approximately 6,500 tonnes discarded during the period of the study.

²² Senegalese shrimp trawlers are obliged to land >15% shrimp, or may be obliged to convert the licence to a finfish licence.

²³ E.g., % of juveniles of species targetted by the artisanal fishery, or the predator prey relationships with species targetted by the artisanal fisheries.

²⁴ See: Report and Proceedings of FAO/DFID Expert Consultation on Bycatch Utilization in Tropical Fisheries, Beijing, September, 1998. NRI, DFID, FAO.

Based on the records of the Senegal's coastal radar stations, between 2-4 % of all coastal trawling activity is estimated to occur in the zone reserved for artisanal fishing and as noted above (Table 3) zone violations are the most frequently detected. Zone violations are the most frequent of all non-administrative violations detected in Mauritania and 20% of all violations detected by the aerial surveillance in C. Verde, Gambia, Guinea, Sierra Leone and Senegal are zone violations. A number of measures can be considered to strengthen enforcement of zone regulations.

Zone definitions. The definition of the zone must be coherent both from the point of view of the fishery and the enforceability of the zone. The marks, or lines defining the zone must be clear and unambiguous. The dimensions of the zone and the location of the zone boundaries should bear some relation to the fishing patterns of the fleet. In Sierra Leone, for example, the IEZ line runs through the middle of the main shrimp fishing ground. Senegal has more than 20 different fishing zones defined for different types of industrial fishing and the geographical complexity of the zone regulations makes interpretation and enforcement difficult. The legal definition of the closed areas may require considerable attention²⁵ in the event that VMS is introduced (see following Box).

Box 3. Defining zone violations for VMS purposes

Zone definition. The definition of the closed areas must be quite clear in electronic (satellite) terms. Currently the closed areas are defined in terms of distance from the coast, or baseline. The satellite coordinates may not be identical to those given on the marine charts so the tolerances in relation to the available charts must be stated. A definition of the closed area by relatively straight lines between coordinates will simplify the implementation of the VMS from the fishermen's point of view and from a legal standpoint, and will reduce the number of coordinates required to define closed areas.

Violation definition. Entry into a closed area without prior notification should constitute an offence. That means it is incumbent on the vessel operator to show valid reason for being in the closed area. Such reasons could include engine trouble, rescue of an artisanal vessel, transit, or entry to port. Transit corridors could also be defined. The alternative to defining 'entry' to a closed area as an offence, is to retain the current definitions of zone offences, namely, that fishing in a closed area is the offence. However, this means that the fisheries authorities must prove that the vessel was actually fishing in the closed area. While the speed of the vessel can be used as an indicator of fishing activity, it may not be conclusive.

Civil offences. VMS violations should be civil offences allowing the 'preponderance of the evidence', rather 'than beyond reasonable doubt' to be used as a criterion of proof of a violation. For more detailed treatment of the international aspects of VMS reference may be made to a recent review²⁶.

Radar. Coastal radar is one of the most effective means of detecting zone violations. However some patrol capability is also required to either positively identify the vessel, or actually make an arrest. The following box provides a description of a coastal radar station in Mauritania.

Aerial patrols. To make the aerial patrols a more effective deterrent, the legislation and administrative procedures should enable prosecution of zone (and other) violations detected by aircraft. A number of Member Countries do not prosecute offences detected by patrol aircraft and continued international assistance in financing aerial patrols can be made contingent on enabling prosecutions.

²⁵ See: Oceanic Développement, 2002. *Etude de faisabilité sur la surveillance des pêches au Sénégal*. Ministère de la Pêche, DPSP, Agence française de Développement. Concarneau, mars 2002; Kelleher, K., 2001. *Planning cost-effective fisheries monitoring, control and surveillance in Mozambique*. Ministry of Fisheries, Mozambique/NORAD.

²⁶ Erik Jaap Molenaar and Martin Tsamenyi, 2000. *Satellite-based vessel monitoring systems. International legal aspects and developments in state practice*. FAO Legal Papers Online #7, April 2000.

VMS. The use of VMS is one the most interesting options for the control of fishing zones. The question of VMS is discussed in detail in a subsequent section of this report.

2.5. THE BLOCK AGREEMENT INITIATIVE AND COOPERATIVE MANAGEMENT OF TRANSBOUNDARY FISHERIES

Joint initiatives on small pelagics face a number of practical constraints and is considered a long-term endeavour. However two distinct processes can be envisaged:

- Continuation of efforts towards a sub-regional agreement on tuna fishing; and
- Pilot bilateral agreements on the management of selected demersal fisheries.

2.5.1. A sub-regional tuna fishing agreement

The concept of block agreements for foreign fishing access has been discussed at some length and the general concept approved at a political level in the Strategic Action Plan of the SRFC. However, there has been little practical progress partly because of a lack of human resources and because of the complex nature of the problems involved. A number of steps have already been proposed (following Box). It is proposed that such steps be concentrated on the tuna / HMS fisheries and on constructive activities which can be undertaken in the short-term, in particular items A.1 to A.4 in the following Box.

Box 4. Proposed²⁷ components of sub-regional (block) access agreements

A. The main internal instruments (i.e., arrangements between the Member States):

1. A coherent set off common and agreed principles governing the access of foreign fishing vessels (and the management of the tuna and HMS resources).
2. A set of agreed minimum terms and conditions (MTC) of access of a strictly technical nature to be applied to all foreign fishing vessels.
3. Mechanisms for the exchange of information on the operation, negotiation and impact of fishing access arrangements and the state of the tuna fisheries.
4. Establishment of a common position in international fora such as ICCAT, FAO, COFI, WTO and in the ACP/EU dialogue.

B. Three types of external instruments (i.e., arrangements between one, or more Member States and DWFNs) can be envisaged:

1. Harmonised parallel arrangements whereby each Member State has a separate access arrangement, but where each arrangement contains identical non-negotiable minimum terms and conditions (CONDITIONS) of a purely technical nature. Separate compensation arrangements would be specific to each Member State.
2. Partial block access arrangements between the combined Member States regarding the basic principles of access and technical components only, i.e., the CONDITIONS, but excluding joint arrangements on financial compensation.
3. Full joint or block access arrangements between the combined Member States and a DWFN (or representative fishing association). A full block access arrangement would include the compensation package, or financial arrangements with the DWFN. Such an arrangement would also require an additional internal mechanism to enable the Member States to fairly and equitably divide compensation payments and other economic benefits.

²⁷ Kelleher, K., 2000. *Design of a Sub-Regional access regime for West African fisheries*. Sub-Regional Fisheries Commission / FAO. Dakar, July 2000. FAO/GCP/INT/722/LUX.

Rather than immediately addressing the complexities of a 'block agreement', the SRFC must concentrate on 'soluble issues'. The following steps can be envisaged to promote a cooperative approach on tuna, based essentially on cooperative national efforts and resources.

1. Prepare a statement of principles, essentially a synthesis of statements from existing conventions to which the Member States are party (i.e., drawn from the SRFC Convention, Convention on access, Strategic Plan, and international instruments).
2. Arrange (and finance) exchange and compilation of information on the tuna fisheries (licences, catch, effort).
3. Establish a joint policy and position particularly with respect to ICCAT. The immediate objective would be for the SRFC Permanent Secretary to speak on behalf of the Member States at ICCAT based on the principle of 'united we stand, divided we fall'. Morocco and the Gulf of Guinea countries could also be associated with the activity.
4. Jointly address the problem of non-receipt of fishing logbooks from the EU and other fleets and cooperate on crosschecking of EEZ entry/exit reports by tuna vessels.

The following table provides a comparison of tuna access fees in the region. However, as the catch data is either incomplete, or unreliable, no effort has been made to estimate the fees as a percentage of the catch value²⁸. The lack of accurate catch data is a result of the non submission of logbooks. This is contrary to the terms and conditions of the access agreements involved and of the licensing conditions. The following example illustrates this serious MCS problem.

Table 4. Non-reporting by Spanish tuna vessels present in the Cape Verde EEZ during the period 10/2001 to 04/2002

Total vessels submitting entry reports (42 longliners, 3 seiners)	45
Vessels which submitted entry reports but not a catch report/ logbook	19 (42%)
of which:	
- vessels submitting entry report	19
- vessels submitting entry AND exit reports	6
- total days in C. Verde EEZ for the 6 vessels (line above)	47

Source: MAP, C. Verde

Monitoring the tuna fishery can be improved by:

- The use of a sub-regional register as an additional coercive measure to oblige vessels to submit logbooks; and
- Developing a corps of sub-regional fisheries observers to place on board the tuna vessels. National observers placed on board would be instructed and empowered to collect information on the vessel's fishing activities in the waters of all Member States. By agreement²⁹ with the EU, Japan Tuna, or other flag states, and with ICCAT involvement, the observers could also collect information on high seas fishing activities.

2.5.2. Cooperative bilateral management of selected demersal fisheries.

A number of transboundary demersal fisheries can benefit from cooperative bilateral management regimes. Three types of cooperative regimes can be distinguished: informative, parallel, and joint, or integrated. MCS would play an integral part in each approach.

²⁸ FFA Member States aim for fee level of 5% of the estimated value of the catch. It should also be noted that EU vessel access fees are heavily subsidised.

²⁹ Access to the reports of flag state observers could also be considered under fisheries agreements.

Informative. This would involve a simple exchange of information on the state of the fishery, the catch and effort, catch composition and average sizes of target species, details of licences and regulations, planned activities and where possible, cooperative research and resource assessment. Each Member State would implement its own management plans.

Parallel A basic agreement would be put in place to manage the fishery in a harmonised manner. Parallel catch and effort databases would be established, resource evaluations would use similar methodologies, licensing terms and conditions would be similar. However, Each Member State would implement its own management plans. In a spirit of dialogue and cooperation, problems and programmes would be addressed through a joint standing committee.

Joint, or integrated. Both Member States would prepare a joint management plan for the fishery, recognising that fishing activities in one state impact upon the resource in the other. The controversial question of how the fishery is divided between the two states would be agreed, e.g., agreed limits on the numbers of licenses issued by each, and essentially identical regulations would be applied in both states.

These steps could be explored with regard to a number of fisheries. The Gambia/ Senegal shrimp fishery, the fisheries of the Guinea Bissau/ Senegal shared zone are possible choices. The intense fishing on the Guinea Bissau/ Guinea frontier (see following figure) also suggests the need for cooperative measures to rationalise exploitation.



Figure 1. Concentration of vessels on the Guinea Bissau/ Guinea frontier illustrated by Lanyi 7 operations chart (March, 2002)

2.5.3. Small pelagics.

Reaching agreement on joint management measures or block agreements for the fisheries for small pelagics may be particularly difficult. Nevertheless, the establishment of shared databases, common methodologies for stock assessments, timely sharing of catch and landings information, and joint research on primary productivity and on environmental factors influencing production and distribution of these species continue to be valuable long-term activities.

2.6. SERIAL OVERFISHING

Several Member States issue short-term (e.g., 2 to 3 month) licences for demersal trawling. The short licenses have the following disadvantages:

- The vessels may have little ‘allegiance’ to the fishery and little interest in the long-term health of the fishery, as the vessel can move to another country when catch rates decline, i.e., these vessels show a reduced level of responsibility;
- Such operators are unlikely to make investments in the country, or may make only a minimum of investment in one country of base;
- The vessels can switch fishing operations between countries to take advantage of the ‘best’ fishing in each country and leave the ‘poorer’ fishing for the vessels permanently based, or operating in the country;
- Permits an erratic and unstable level of fishing effort.

The extent of the problem can be seen by an examination of the pattern of licensing in Guinea Bissau in 2000. Table 5 shows that 55% of the vessels operating in Guinea Bissau purchased licences for 6 months or less, while 74 vessels (40%) fished (or were licensed to fish) in Guinea Bissau waters for the full year. As almost all tuna vessels in this example purchased 12-month licences, the short-term licences are for demersal trawling.

Table 5. Vessel licensing pattern in Guinea Bissau in 2000

No. of months licensed	No. of vessels	%	< or = 6 months	> 6 months
2	14	7%		
3	56	30%		
5	3	2%		
6	29	16%		
7	1	1%		
9	9	5%		
11	1	1%		
12	74	40%		
Total vessels	187		55%	45%

Source: MAP Excel files. Total licences issued = 238. Note: as vessel names are not always spelled in an identical manner minor errors are inherent in the database used. However this does not invalidate the general conclusions.

For several reasons it is suggested that only annual licenses be issued:

- To ensure that vessels establish economic links with the Member State (crew, supplies, fuel, landings);
- To establish a moral link for responsible fishing;
- To stabilise fishing effort; and
- To enable a more accurate projection of licence revenues

To facilitate the cash flow of the vessel operators, payment for annual licenses can be made in ‘tranches’. No refunds should be given, such as those granted in Guinea in the event that the vessel does not fish. Because of the seasonal nature of the tuna fisheries, short term licences are considered acceptable.

2.7. OBSERVER PROGRAMMES

A number of relevant questions have been posed as themes for a forthcoming international conference on observers. Some of the questions and proposed answers are as follows:

What is the observer's role in violation situations, in particular, should observer information be used as evidence of a violation? While it is tempting to use valuable observer information as evidence, this may place the life of observers at risk. In Sierra Leone, observer information is not used in evidence as it is “the word of the observer against the word of the skipper”.

Table 6. Summary information on observer programmes in the sub -region

	C. Verde	Gambia	G. Bissau	Guinea	Mauritania	Senegal	S. Leone
No. of trained observers	?		124	>150	Over 100		100
No. at sea (approx.)	1		All***	145	40 ^{##}		40
Type	scientific	monitor	monitor	monitor	Monitor + scientific	Monitor	monitor
Payment by	Ministry		Industry** special a/c	Industry** special a/c	DSPCM/ EU del.	Industry** special a/c	Direct [#] by companies
Salary /month (US\$)					220		
% of vessels* covered	na	100%	100%	100%	100%	low	100%
On support vessels	no	no	no	no	?	yes	yes

Notes: * smaller vessels may not have space. **Financed by industry and actual payments made by fisheries administration.

***There are more licensed vessels than observers. [#] 30 are public servants. ^{##} only on EU vessels (not on pelagic vessels).

Is the risk of deploying observers worth the data collected? The answer depends essentially on how well the observer information is used, and the reliability of the observer information. Observer information often remains unused for months, or even years. In many countries there is no scientific programme associated with the observers, e.g., reporting of size distribution of indicator species, or even reporting on the proportions of the commercial size grades of shrimp. Reliability depends to a great extent on the training and skills of the observer and partly on use of the data. If, for example, observer data is used to calculate fees, or determine utilisation of quotas, then reliability may be questionable.

How are optimal observer coverage requirements determined? The relatively low costs of observers favours a high level of coverage in the sub-region. However, fewer better trained, and better paid observers may be of more value as the potential for corruption may be reduced, information collected may be more accurate, and the lower volume of observer data may enable more rapid analysis. Examination of observer reports from the different countries shows a vast range of abilities and skills within each observer corps and between countries in the sub-region. In some cases observers have difficulty writing clearly and fail to provide basic information. Others provide extremely valuable reports with sound recommendations and demonstrate a clear understanding of the fisheries.

How should observer programmes be staffed and financed? These are key questions in the sub-region and all countries experience difficulties. Few observers are public servants (functionaires) and many only have trip-by-trip contracts. Insurance and social security pose problems and salary levels are relatively low. An excess of observers over available posts also leads to favouritism and bad practices. Observer programmes are usually financed outside of the regular budget and in one case the observers are paid directly by the vessel operator, or agent. A more detailed examination of the observer programmes in the region may be of value, indicating the advantages and disadvantages of certain observer programmes, in particular as regards financing and training of observers, and their contractual status. The trend towards private contracts for observer programmes can also be examined.

There are strong arguments for a sub-regional observer programme for 2 types of vessels: tuna vessels and various types of support vessels including reefers, bunkers, ramasseurs and supply vessels. The programme can readily be financed through the contributions of the vessel operators and the fisheries access agreements. The organisation of the tuna component would require close cooperation with the EU, the Japan Tuna Association and ICCAT.

3. VESSELS AND FLEETS

3.1. TONNAGE AND MEASUREMENT OF VESSEL FISHING CAPACITY

Gross Registered Tonnage³⁰ (GRT=TJB) is extensively used in the sub-region as a measure of vessel capacity, as a basis for relating the number of licences issued to the estimate of available resources, and as a basis for calculating licence fees, both nationally and in the EU and other access agreements.

3.1.1. Scale of the problem

Apart from the obvious difficulty in relating GRT to fishing effort and fishing mortality, for some time there has been widespread concern that the actual GRT values given by the vessel operators are underestimated, or falsified with a view to reducing the licence fee payments. Further there is ample evidence that this is so. A recent investigation in Guinea indicates average underestimates of GRT in the order of 48% (sample of 92 vessels). The underestimates range from 0.52% to 197%.

Table 7. Numbers of vessels and degree of underestimation of vessel capacity (GRT) in Guinée in 2001.

<0% (no falsification)	<20%	>20% < or = 50%	>50% < 100%	>100%	'Lost' tonnage
16	12	9	34	21	10,687

Source: CNSP, Guinée.

The following table shows the correlation (multiple r) between stated GRT (GT) and a simple index of vessel size, namely the length x breadth (beam) for a sample of 79 vessels for which the GT has already been verified by the CNSP, Guinea (i.e., in sample 1 the GT has already been revised upwards by an average of 112% by the Guinea authorities).

Table 8. Correlation coefficient between GRT and (length x beam) for fleets licensed to fish in Guinea

	Sample 1: 79 vessels		Sample 2: 251 vessels
Flag state	Multiple r by flag	Average % GRT under-reported	Multiple r by flag
China	0.27	112%	0.55
Guinea			0.75
Korean	0.49	46%	0.78
EU			0.96
Belize (12 vessels)			0.83
Other (EU, Guinea)	0.91	46%	
All vessels ()	0.84	-	

Source data: CNSP, Guinea, from licence submissions and revisions from Lloyds. Calculation with Excel CORREL function.

³⁰ The term GRT = TJB is used extensively in the sub-region in legislation, databases, licence forms and other administrative documents. In this report it is considered synonymous with Gross Tonnage (GT). A short note on tonnage measurement is provided in the following Boxes and reference should be made to the London Convention for further technical details of measurement.

It is clear that the stated GRT/ GT of the Chinese vessels bears little relationship³¹ to the size (length and breath) of the vessel (multiple $r = 0.26$). This fleet also shows the highest degree of falsification. A similar analysis is shown for the Korean fleet. A second analysis carried out on the Senegalese industrial fleet shows a similar pattern. An analysis carried out on the French national fleet shows a close relationship between length and tonnage (see graphic).

Table 9. Correlation coefficient between GRT and (length x beam) for fleets licensed to fish in Senegal

Vessel origin	Number of vessels	Multiple r by vessel origin
China (Soleil vessels)	20	0.17
EU	11	0.92
All vessels	143	0.44

Source: DPSP vessel database

Table 10. GRT/ length regression statistics for declared characteristics of vessels licensed in Mauritania

Regression Statistics	All vessels	Belize	China	Japan (longliners)	Ukraine (pelagic trawlers)	Spain (demersal trawlers)
Multiple R	0.88	0.94	0.47	0.47	0.92	0.87
R Square	0.78	0.88	0.22	0.22	0.85	0.76
Adjusted R Square	0.78	0.88	0.19	0.21	0.84	0.76
Standard Error	800.54	649.77	516.51	46.80	823.12	53.16
Number in sample	1545	23	29	134	32	234

Source: DNSPM, Nouadhibou (extracted using Excel CORREL function).

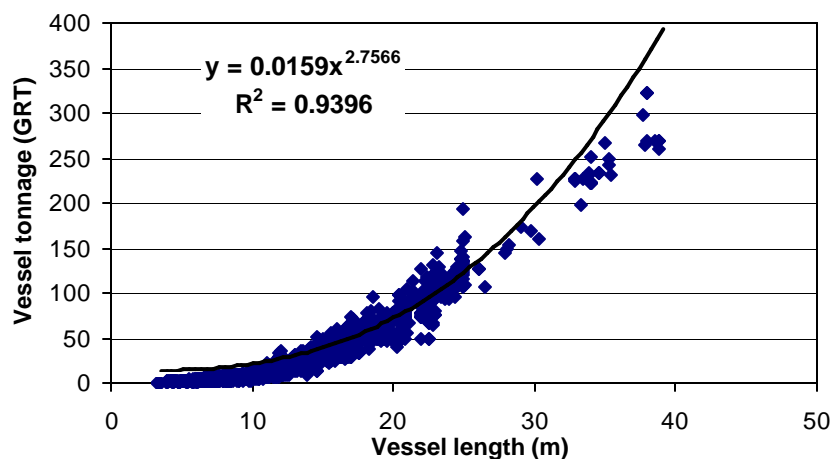


Figure 2. Length / GRT regression for the French (domestic) fleet³²

The differences between the reported tonnage of the different fleets may be due to differences in the manner in which tonnage is measured in the flag states³³, or deliberate mis-statement of tonnage by vessel operators. Whatever the precise cause, the difference in tonnage measurement has several serious implications including:

- loss of licence fee revenues;

³¹ The higher the multiple r the closer is the correlation between vessel 'area' and stated GRT.

³² Data from Oceanic Developpement, Concarneau.

³³ The flag state's national rules of measurement of GT may be different from the international measure, particularly in the case of the older vessels.

- jeopardises resource management which often based on an estimate of the fishing capacity of the fleet as measured by GRT/ GT;
- undermines any fleet capacity management plans; and
- gives an economic advantage to vessels which mis-state tonnage.

3.1.2. Potential loss of licence revenues

To provide an estimate of the lost licence fee revenues a simple calculation has been made based on the data from Guinea Bissau applied to one group of trawlers only. The Chinese fleet was selected because: (i) there is a particularly weak correlation between LOA and GRT; (ii) information exists on GRT, LOA, and licence fee payments for 2001; (iii) licence fees from this fleet represent an important component of the Guinea Bissau revenues; and (iv) improved funding is the key to improved MCS in Guinea Bissau. The following exercise is not intended to be definitive, but merely illustrative of the possible impact on revenues of inconsistent estimates of GRT. It is intended as a basis for further more detailed reflection and examination of the issues involved.

Step 1. Derivation of the regression equation. This was derived from the Spanish trawler fleet in Mauritania. The fit of the regression line is illustrated in the following figure (Figure 3).

Table 11 Derivation of regression equation from sample of 234 Spanish trawlers

Number of vessels	234	Range of GRT: 19-599	Range of LOA: 17-62	
Regression Statistics	Multiple R	0.87	Adjusted R Square	0.76
	R Square	0.76	Standard Error	53.16
Coefficients	Intercept	-215.78	X Variable	13.35

Source of data : DSPCM, Nouadhibou

Step 2. The equation is then applied to the Chinese fleet operating in Guinea Bissau, using the LOA to recalculate the GRT.

Step 3. the licence fees are recalculated using the revised GRTs, giving the following results:

Table 12. Revision of GRT and revised revenue projection

	Original declared GRT	Declared LOA (meters)	Projected GRT based on regression equation	Difference in GRT (regression-original)	% difference
Average	220	40	324	103	49.95%
Range	196-284	35-44	251-358	+8 to +173	3-87%
Receipts 2001		US\$	FCFA	Total receipts (US\$)	
		2,172,275	65,116,721	2,263,989	
Additional projected receipts based on 49.95% increase (line 1 col. 4)				1,130,862	

Table 12 shows the potential loss of revenue for Guinea Bissau from one group of vessels. Considering that Asian vessels account for a substantial proportion of the approximately 1500 industrial vessels operating in the region (excluding Cape Verde), the potential direct losses may be many tens of millions of US\$ per year. Potential historical losses have not been estimated.

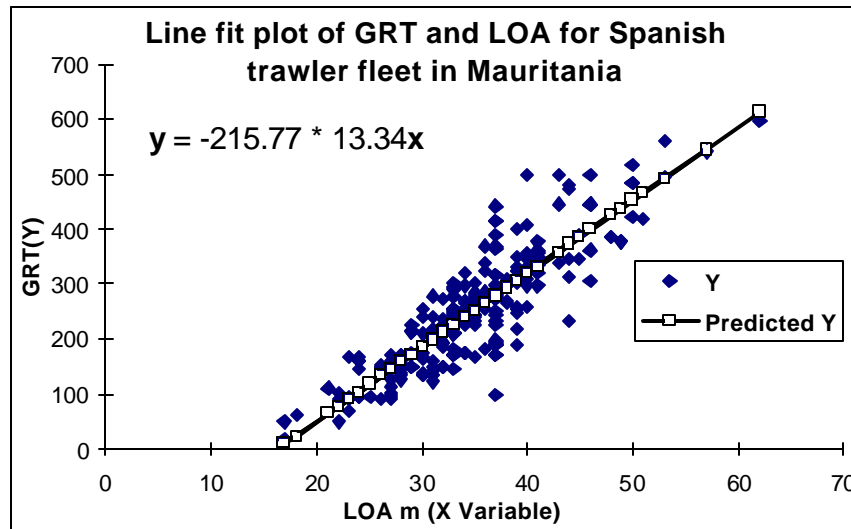


Figure 3. Line fit plot for GRT and LOA (see Table 11)

3.1.3. Approaches to solving the tonnage problem

There are a number of approaches to resolving the ‘tonnage problem’. Firstly, the problem has to be redefined. The problem is not the measurement of tonnage, but finding an accurate measure of a vessel’s fishing capacity. It is reasonable to assume that there is a relationship between vessel size and the vessel’s fishing potential. Tonnage is not the only measure of the vessel’s size and other indicators can also be used, or at least a comparison made between the stated tonnage and other indicators. As shown in the above tables, there are good correlations between the simple length measurement and tonnage for certain fleets. The recent study of the French fleet also confirms this relationship.

It is suggested that, in addition to GRT, other means of measuring and crosschecking vessel capacity be used, in particular length (Length over all = LOA) and breadth (B, beam), and possibly the depth (D, distance from deck to keel at midships). The first two measurements can easily be done by a fisheries inspector if the vessel is alongside the quay. With limited additional effort the measure of depth can also be carried out by fisheries inspectors and these three measurements provide two other simple indicators of the vessel size:

- Total rectangular area (length x beam) AREA, and
- Total cubic volume (length x beam x depth) VOLUME.

These indicators can be used either directly, or to supplement, or verify the vessel’s fishing potential as measured by its stated GRT/GT. The licence fees can be calculated by meter (LOA), AREA, or VOLUME of vessel, or by GRT/ GT, or by whichever is greater based on a conversion formula based on a set of fishing vessels for which the characteristics have been verified. If necessary, an additional factor can be included to adjust for engine horsepower. This factor can be calculated by comparing the recorded catches of similar sized vessels which have different stated engine capacity.

Box 5. International Convention on Tonnage Measurement of Ships, 1969 (London Convention)

Gross Registered Tonnage, or GRT (= TJB) has been replaced by Gross Tonnage (GT) as per this Convention. The gross tonnage is a function of the moulded volume of all enclosed spaces of the ship. The net tonnage is produced by a formula which is a function of the moulded volume of all cargo spaces of the ship. The net tonnage 'shall not be taken as less than 30 per cent of the gross tonnage'.

Article 9. Form of certificate

- (1) The certificate shall be drawn up in the official language or languages of the issuing country. If the language used is neither English nor French, the text shall include a translation into one of these languages.
- (2) The form of the certificate shall correspond to that of the model given in Annex II

Article 15. Communication of information

The Contracting Governments undertake to communicate to and deposit with the Organization:

- (a) a sufficient number of specimens of their certificates issued under the provisions of the present Convention for circulation to the Contracting Governments;
- (b) the text of the laws, orders, decrees, regulations and other instruments which shall have been promulgated on the various matters within the scope of the present Convention; and
- (c) a list of non-governmental agencies which are authorized to act in their behalf in matters relating to tonnages for circulation to the Contracting Governments.

Regulation 3. Gross tonnage

The gross tonnage (GT) of a ship shall be determined by the following formula: $GT = K_1 V$ where: V = Total volume of all enclosed spaces of the ship in cubic metres, $K_1 = 0.2 + 0.02 \log_{10} V$. See diagram in Annex.

Note that the Convention does not apply to ships of less than 24 metres (79 feet) in length.

Full text available from: <http://www.austlii.edu.au/>, Australian Treaty Series 1982 No 15

Original³⁴ ships papers (tonnage and insurance certificates) should be presented as part of the licensing procedure. The registration and insurance documents can be crosschecked. However, these documents themselves may not be a valid representation of the vessel as some are issued without the vessel being physically checked, or the physical checks may not be conducted correctly, particularly in the case of vessels flying flags of convenience. If in doubt, a representative of an international classification society³⁵ may be called upon to verify the vessel measurements, at the expense of the owner/ operator. However, even sighting correctly prepared official ships documents does not appear to resolve the 'tonnage problem', as illustrated by the above comparisons between the fleets.

The proposed regional register can also assist in establishing valid vessel characteristics, and in the absence of the regional register the databases provided to the SRFC accompanying this report can be consulted as a means of comparing reported vessel characteristics.

³⁴ Photocopies are currently accepted in some Member States.

³⁵ E.g., Llyods, Bureau Veritas. Due caution should be exercised to verify the qualifications and reputation of classification agents/ societies. Words such as 'global', 'international', 'London', etc., in the society's name does not necessarily confer repute.

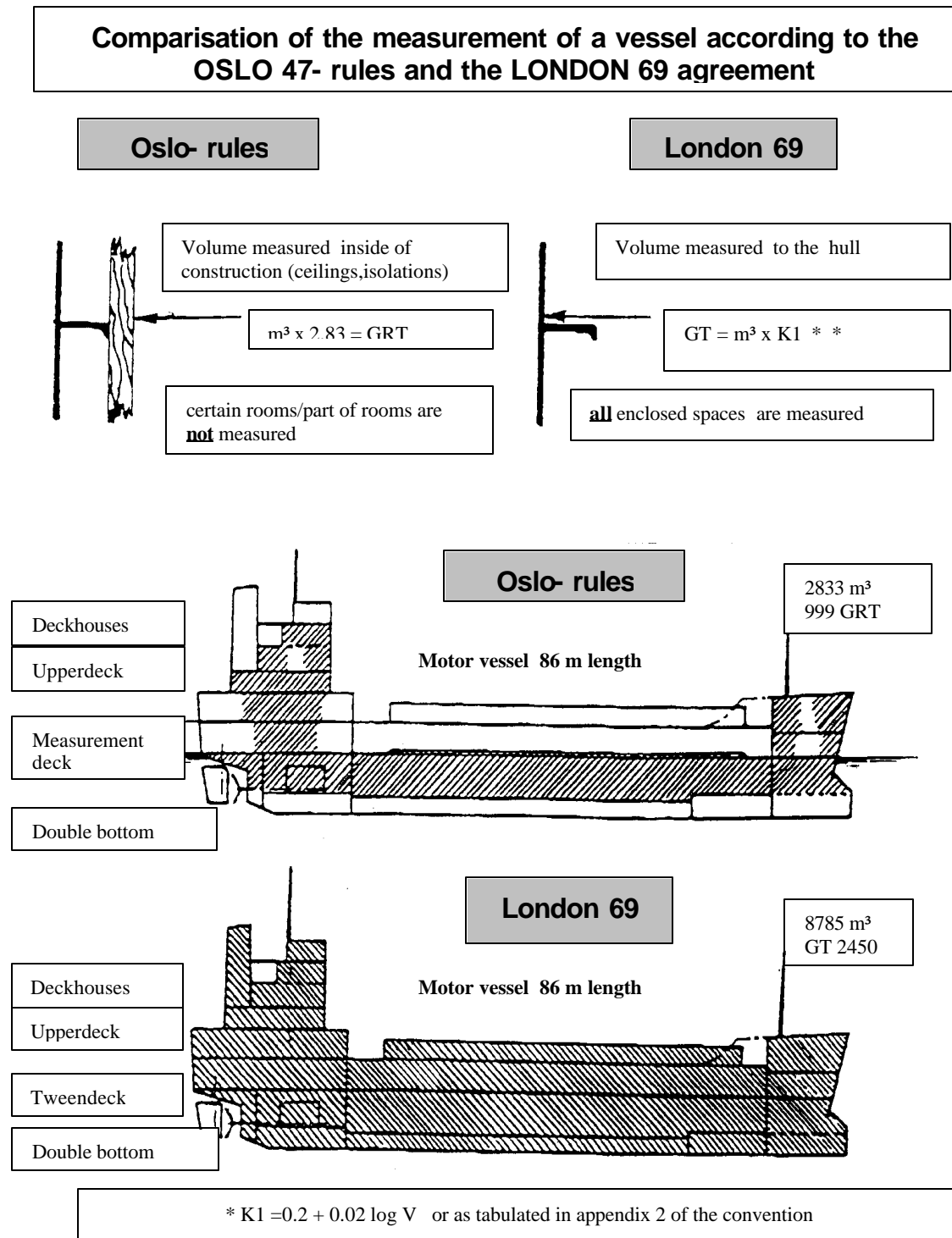


Figure 4. Measurement of vessel tonnage by different conventions

(figure courtesy of A. Smith, FAO)

There are no capacity management plans³⁶ in the sub-region. It will not be possible to implement the IPOA on fishing capacity without an accurate means of measuring fishing capacity. Tonnage is but one measure of fishing capacity. Additional indicators can also be factored into vessel capacity calculations, in particular the engine horsepower and possibly the number of trawls used simultaneously (e.g., in the case of shallow water shrimp trawlers). The difficulties associated with the measurement of engine horsepower are not considered in this report. However, the subject has been addressed in some detail as part of the implementation of the EU's Multi Annual Guidance Programmes and reference may be made to these experiences. It is not considered possible to allow for factors such as the skills and experience of the vessel skippers.

3.2. IDENTIFYING VESSELS

The FAO recommends the use of the vessel call sign as a unique vessel identifier. The FFA has successfully made use of the call sign in its regional register. However, the experience in the region shows that when vessels change flag, they may retain their old call sign resulting in duplicate call signs. Thus it is strongly suggested that any sub-regional vessel information system should use a unique vessel identifier intrinsic to the information system in addition to the vessel call sign. Every effort should be made to ensure that the vessel call signs are accurate as these are also used to mark the vessel for surveillance purposes.

A Excel database of call signs is provided in electronic form as part of this report. This can be used as a basic check to verify if the vessel is using a call sign of its flag state. A spot check of the vessel call signs recorded in the SOCU databases shows that numerous vessels are using call signs which are not those issued by their flag state as indicated for the purposes of the fishing licence.

In the case of suspected delinquent vessels the call sign and the vessel name should be cut in steel plate using characters of appropriate size (see FAO Technical Guidelines – Fishing Operations) and welded to the vessel at the appropriate places before the vessel is allowed to leave port. It is suggested that the call sign be welded on each side atop the wheelhouse and on the gunwales amidships for such vessels. Numerous vessels have very similar names and call signs, which can easily be altered. A similar procedure can be applied to such vessels and to distant-water high seas vessels unloading in ports in the sub-region, e.g., tuna longliners.

3.3. REEFERS, RAMASSEURS AND THE OFFSHORE FISHERY ECONOMY

The offshore fishery economy (see section 4.2.1) of West Africa cannot operate without the fleet supporting the fishing vessels. Four types of vessels can be distinguished: refrigerated cargo vessels (generally known as 'reefers'); fuel supply vessels (generally known as 'bunkers'); supply vessels, which provide cartons, netting, gear, and at times transfer crews and provide fuel; and 'ramasseurs' or canoe support vessels.

³⁶ Note: Extract from 2002 EU capacity management proposal “ estimated withdrawal of some 8,600 vessels which represents 8.5% of the number of EU fishing vessels and about 350,000 GT or 18% in tonnage. To encourage the necessary scrapping of vessels, the Commission proposes a reprogramming of funds currently available for building up capacity, the **export of vessels** or the establishment of joint enterprises ... and the addition of €272 million for the period 2003 to 2006 to supplement the FIGF funds”.

Table 13. Fleet support vessels by type and flag

Flag state	bunker	ramasseur	reefer	supply	supply + bunker	unknown	Total
Belize	1		1				2
China	1		14				15
Cuba		1					1
Greece			2				2
Guinea		3					3
Jamaica			1				1
Korea		4	16				20
Panama			4				4
Russia	1		1				2
Senegal		2					2
Spain			3				3
Unknown flag	6	5	6	6	1	3	27
Total	9	15	48	6	1	3	82

Note: a complete list of vessel names is made available to the SRFC as an electronic supplement part of this report.

Reefers and product flows. The reefers collect frozen fish from numerous catcher vessels. In general, the smaller, less expensive fish and the small pelagics are landed in the Gulf of Guinea countries to supply the expanding urban markets in cities like Abidjan, Accra, and Lagos. The bulk of the higher valued prime fish (e.g., snappers and groupers, sparidae), cephalopods and crustacea are landed in Las Palmas, Dakar, and other major transshipment points. As the fish is collected from many different vessels of different flags, companies, and standards of hygiene, traceability of product on reefers poses difficulties.

Table 14. Number of vessels (all types) operating per country

Gambia	G. Bissau	Guinea	Mauritania	Sierra Leone	Gabon	Total
1	23	42	6*	31	5	82

* Information incomplete for Mauritania.

This difficulty in traceability presents both problems and opportunities. It presents problems for importing countries who have HACCP requirements. On the other hand it provides opportunities for those who may wish to avoid strict sanitary controls, particularly as ‘HACCP-certified’ product³⁷ commands a premium price. Similarly, the difficulties in traceability presents problems in verifying the origin of products, an important factor in determining the level of duties paid by importing countries. The EU quota tariff regulations³⁸ adds further complexity to imports fish to the Canary Islands. Although the reefers offer an effective means of bringing West African fish to the market, their offshore commercial operations are in direct competition with local industry, and may often have a distinct competitive advantage as a result of the weak controls. Fifteen of the 82 vessels operate in 2 countries. The following table shows the names of those vessels reported to operate in more than 2 countries.

Table 15. Five support vessels and the number of countries in which each is reported to operate

Vessel name	Flag	Type	Number of sub-regional countries
El Carmen Castellano	Korea	reefer	3
Hiafeng 827	China	reefer	3
Hiafeng 830	China	reefer	3
Phoceia	Korea	reefer	3
Guetndar	Korea	ramasseur	4

³⁷ E.g., with EU export approval numbers.

³⁸ Council Regulation (EC) No 704/2002 of 25 March 2002 temporarily suspending autonomous Common Customs Tariff duties on imports of certain industrial products and opening and providing for the administration of autonomous Community tariff quotas on imports of certain fishery products into the Canary Islands.

Bunkers and supply vessels. Bunkering and supply of fishing vessels in territorial waters, or on the high seas tends to place locally-based vessels at a competitive disadvantage. The ‘offshore’ vessels generally pay lower fuel prices exempt of taxes, contribute little to the local economy and tax revenues, and avoid payment of port dues. Oil spillage and pollution may occur in unregulated bunkering locations.

Ramasseurs. Ramasseurs, or canoe support vessels catch up to 4 tonnes per day of prime fish using up to 49 canoes, each usually manned by 4 fishermen. The value of the catch is considerably higher than for demersal trawlers of the same tonnage and the licence fees should be calculated accordingly. These vessels may also compete directly with local artisanal fishermen, and while the ramasseur may remain outside the zones reserved for the local artisanal fishermen, the ramasseur’s fishing pirogues may fish inside the closed area and their activities are difficult to monitor.

Ramasseurs may recruit Senegalese line fishermen from Quartier Guet Ndar in St. Louis and travel to fishing grounds as far as Gabon. The 40-49 pirogues are either carried on board, or towed. A typical crew complement is 200 fishermen, 32 African crew, 4 Chinese, 4 Korean, 2 Vietnamese, 1-2 Indonesian, total 230-250 on board a 250 GRT vessel for 80 days, or more. Health conditions, accommodation conditions and safety at sea are extremely poor. Lifejackets and life rafts may not be available. Food is poor and shortage of water constrains washing and personal hygiene. Working hours are from 05:00-06:00 to 20:00 causing tiredness and accidents. Pirogues may be lost if the rationed fuel is inadequate, or in the event of engine breakdown. Conflict between ethnic groups occurs.

All support vessels, including fuel supply vessels should be licensed. It is strongly recommended that the SRFC consider means to place sub-regional observers on board all such vessels. Guinea plans to place observers on the ‘ramasseurs’ and Senegal already does so for vessels which use Senegalese pirogues. Further comparison of the licence fees paid by these vessels in different Member States may also be of interest.

3.4. EXTRADITION AND LONG-ARM JURISDICTION

By long-arm jurisdiction is meant the effective application of the laws of one state in the territory of another through procedures agreed between the states. The extradition of a vessel from one port state to another state for fishery violations³⁹ in the latter is a complex legal question, involving issues ranging from vessel insurance to international maritime law, and the domestic legislations of the countries involved. Whatever action is taken must be taken under port state law, and is likely to require amendments to fisheries (and other) legislation in the context of a sub-regional convention. Perhaps the simplest means of applying physical extradition would be the lodgement of a bond in the port state, repayable upon arrival in the port of the state where the offence was allegedly committed. In this manner the vessel owner/operator retains responsibility for the transit of the vessel, for crew safety, and other liabilities. Rather than attempting to physically extradite the vessel, alternative approaches can be considered.

A generic article can be placed in port state fisheries laws making an offence against the fisheries laws of other states an offence against the laws of the port state. The state in which the offence was allegedly committed would then request the port state to detain the vessel on the basis of a dossier providing adequate evidence of the violation. The violating vessel could then be subject to sanctions applied by the port state. Laws other than the fisheries laws may also be used. These could include the possession of stolen goods (illegally caught fish), sale/ traffic in stolen goods, illegal import of goods, misdeclaration of

³⁹ Explanatory example: A vessel is photographed fishing without a licence in Gambia, i.e., there is very strong evidence that the vessel was fishing illegally. The Gambian authorities wish to sanction the vessel, which is now stationed in the Port of Dakar. What court or other procedures can the Gambian authorities undertake in Senegal to sanction the vessel?

goods. In addition, port access could be denied to alleged delinquent vessels and clauses for the long-arm jurisdiction described above could be included in fisheries access agreements.

3.5. DATABASE OF ALL INDUSTRIAL VESSELS OPERATING IN THE SUB-REGION

The main database containing available data on all vessels licensed to operate in the sub-region was derived primarily from the SOCU information system and is supplemented with additional information from some countries. It is provided on the CD, which accompanies this report. Several summary tables are provided below.

Approximately 1500 industrial vessel fish in the sub-region. Every effort has been made to 'clean' the database. However, it is the work of SOCU to thoroughly 'clean' the database and to eliminate conflicting vessel information through dialogue with the countries.

*Table 16. Breakdown of numbers of different industrial vessels licensed in the sub -region since 31/12/1999 by flag state excluding Cape Verde**

Flag	No.	%	Flag	No.	%	Flag	No.	%
ESP	367	23.4%	GNB	20	1.3%	CAV	3	0.2%
SEN	275	17.5%	PAN	20	1.3%	MAR	2	0.1%
CHN	163	10.4%	BZE	17	1.1%	DEU	2	0.1%
MRT	152	9.7%	PRT	17	1.1%	IRL	2	0.1%
COR	98	6.2%	SLE	17	1.1%	NET	2	0.1%
FRA	77	4.9%	HON	13	0.8%	NGA	2	0.1%
GIN	53	3.4%	000**	12	0.8%	SVG	2	0.1%
SUN	45	2.9%	NLD	12	0.8%	SWE	2	0.1%
GRC	44	2.8%	CHP	8	0.5%	BGR	1	0.1%
ITA	40	2.5%	GHA	7	0.4%	CUB	1	0.1%
JPN	28	1.8%	LET	6	0.4%	GAB	1	0.1%
UKR	28	1.8%	LIT	5	0.3%	MAL	1	0.1%
GAM	20	1.3%	NOR	5	0.3%	USA	1	0.1%
Total							1571	

Source: SOCU databases. Flag codes as per SOCU database. *Cape Verde vessels not in SOCU databases. **unknown flag.

Table 17. Breakdown of industrial fleet fishing in one, or more countries (excluding Cape Verde)

Number of countries in which vessel is fishing	4	3	2	1
Number of vessels	22	33	114	1402

4. FINANCING MCS

MCS requires two quite different types of finance: for capital investment; and for recurrent costs. The financing of recurrent costs is considered the most important, the most problematic and that which receives the least attention in the sub-region. The lack of recurrent finance is possibly the single most important constraint to effective MCS.

There are three main sources of funding for MCS: (i) Member State internal resources, including receipts from fisheries access agreements; (ii) donor funding; and (iii) private sector finance, including concessional loans from financial institutions.

There has been a heavy reliance on donor funding in the past and in some cases long-term donor support has clearly had a very significant impact (Senegal, Mauritania, Guinea). However, reliance on donor funding has tended to generate a ‘project mentality’, or the impression that little progress can be made without donor support, not only for capital acquisition, but for salary support, major repairs, and some recurrent costs.

This report concentrates more on the possibilities for a more sustainable type of finance derived from improved returns from the fisheries, more efficient use of available resources, and adapting the fisheries management measures to take account of the real levels of MCS and their financial sustainability.

4.1. CAPITAL INVESTMENT AND FUTURE PROSPECTS FOR DONOR SUPPORT

Member States have made limited MCS investments, other than military hardware. Among these investments are: aircraft purchase in Cape Verde; continued development of coastal stations in Guinea and Mauritania; and a new MCS headquarters and coastal radar stations in Senegal. Sierra Leone has established a number of forward bases (= coastal stations) and contributed to rehabilitation of the patrol vessel.

The capital investment programmes tend to be donor driven and financed. The following is a sample of selected of the donor investments made, or planned.

Table 18. Donor involvement in MCS in the Sub -Region and Sierra Leone

Country	Donor	Investment
Cape Verde	Luxembourg	Repair of patrol vessel, assistance with aircraft purchase/ refitting
Gambia	Luxembourg	SOCU building and equipment, radio and computer equipment
Guinea Bissau	China?	Patrol vessels
Guinea	Canada	Development of CNSP, buildings, training, equipment, software
Mauritania	Germany	Long term involvement, vessels, radar, technical assistance
Senegal	Canada	Support of PSPS, purchase of aircraft (now terminated)
Sierra Leone	UK	Military support

The prospects for donor assistance for capital investment in MCS are not encouraging. Several of the leading donors have reduced their involvement and commitments. Major investments in Guinea (ADB/ AFD) are on hold. AFD is currently reviewing its involvement in Senegal and it is understood that available AFD budgets have been reduced for the entire sub-region. Canada is withdrawing its support from the SRFC (AGREG/ SIGREH) and has largely retired from involvement in Guinea. Germany is currently reviewing its commitments to Mauritania (indications of future German involvement will probably be available in June/July). Donor priorities in Guinea and Sierra Leone are understandably directed towards rehabilitation of basic infrastructure, health, education and good governance.

ADB has expressed interest in MCS in Guinea Bissau, Guinea and Sierra Leone and already has an input in the artisanal fisheries in Sierra Leone and in Gambia. ADB participation in Guinea is envisaged as co-financing with AFD, and AFD has expressed a similar desire to have a co-financing partner (not necessarily ADB) with respect to linked to funding MCS in Senegal. FAO has some funds in trust, which may be applied to MCS in the region, particularly for joint initiatives on VMS.

Other than Luxembourg, the single most attractive potential donor is the EU, considering its fisheries presence in the sub-region, and the EU’s market requirements for West African fish. To date the EU’s initiatives regarding regional MCS have not been particularly encouraging (e.g., SADC, FFA and IOC), and subject to lengthy delays, tendering and administrative problems, and unresolved policy issues, such

that beneficiaries have had to seek alternative finance while awaiting EU assistance. Non-traditional donors could also be approached including Japan (e.g., communications equipment, coastal radar stations), Korea, Spain⁴⁰, USA (maritime security), Portugal (training and technical assistance) as all have linkages to the sector.

Financing from the private sector and international financial institutions can also be explored. The Sierra Leone experience⁴¹ with private sector finance should stand as a clear note of caution regarding the potential pitfalls of private sector surveillance. If private sector finance is to be involved then the role of the private sector partner must be crystal clear⁴² and the contractual obligations very precise. Potential multilateral financial institutions include the ADB, WB and the EIB. These institutions may be attracted to co-financing of a sub-regional MCS programme based on some of the elements outlined in this report. The banks seek an economic, or financial rate of return for their investments and this problem is addressed below (see 4.2.1).

The following are suggested as interim, or short-term alternatives to major capital investment.

(i) Deployment of arrested vessels.

As part of the sanctions imposed on an arrested vessel the vessel can be obliged to operate for a period as a surveillance vessel. All fishing gear would be removed and one, or more RIBs installed with a system of launching and recovery. Most of the crew would be removed and substituted with crew from the fisheries authority, or navy. A radio officer from the fisheries administration would be placed on board and the radios made 'out of bounds' to the captain and original vessel crew. All costs would be borne by the vessel operator for the period.

Suitable confiscated vessels may be converted for surveillance duties. Older confiscated vessels, which are unsuitable could be beached and used as coastal stations (i.e., a ready made jetty, with electric power, radios, accommodation, storage, and possible freezing capacity for local fishermen).

(ii) Use of confiscated gear

As part of the sanctions imposed selected equipment (considered to be fishing gear) be confiscated. Thus any equipment of use to the MCS authorities would be forfeit. This would include: radios, echo sounders, radar, GPS equipment, auxiliary motors, generators, air conditioners, life rafts, lifejackets, winches.

4.2. FINANCING RECURRENT EXPENDITURES

As noted above, with the possible exception of Mauritania, the financing of recurrent MCS expenditure is a major problem in the sub-region. Authorities have major problems in financing salaries (Guinea Bissau, Senegal), vessel maintenance and repair (Cape Verde, Gambia, Guinea Bissau, Senegal) and vessel operations. The following table provides some indication of the range of financial difficulties.

Several approaches are suggested:

- Most importantly – improving the economic returns from the fishery; and
- Efficient use of limited MCS resources.

⁴⁰ Senegal is understood to have held discussions regarding an aircraft and patrol vessel.

⁴¹ Sierra Fishing Company Limited, 1994. Report of the investigating committee into the activities of Sierra Fishing Company Limited for the period 1989 to 1993. Internal report, April 1994.

⁴² Examples of clear and limited roles include: Mozambique – VMS, Falklands and Norway – patrol vessel operations, Canada – aerial surveillance.

Table 19. Recurrent MCS finance : sources and difficulties

Country	Sources of finance	Difficulties
Cape Verde	Treasury	Insufficient government revenues
Gambia	Treasury	Surveillance funds allocated to defence forces
Guinea Bissau	Fines, observer fees	Treasury not transferring revenues to AA
Guinea	Treasury, fines	
Mauritania	Treasury, fines	
Senegal	Licence fees, fines, treasury	Institutional difficulties in transforming project (PSPS) to directorate, high dependency on EU access agreement revenues.
Sierra Leone	Treasury, vessel agents	Bureaucratic problems in transfer of funds from fines

4.2.1. Improving the economic returns from fisheries

Recurrent MCS activities are typically financed from three alternative sources:

- from the government's recurrent budget (treasury);
- through a fisheries sector fund into which registration fees, licence fees, royalties, fines, or revenue from fishing access agreements may be deposited;
- by direct contributions from the fishing industry, usually for observers, or VMS.

Improving the economic returns from the fisheries will reinforce all three potential sources. Two closely linked initiatives, focused on the 'southern' group of countries (Guinea Bissau, Guinea and Sierra Leone) are discussed below. Both require improved MCS:

- Bringing the 'offshore' fisheries economy 'onshore'; and
- Increasing direct returns while reducing fishing effort

(i) **Offshore to onshore**

Many of the economic activities of the foreign fleets operating in sub-regional waters constitute an 'offshore' economy, particularly for States with inadequate port infrastructure and a history of economic instability, such as Sierra Leone and Guinea Bissau.

By 'offshore' economy is meant, e.g., vessel owners do not pay local taxes; working conditions on the vessels do not conform to local labour laws; banking transactions for the sale of the catch do not flow through the local banks; and fuel and supplies are not purchased on the local market. The following Box lists the some of economic benefits and impacts of an industrial fishery to the economy of Member States (**onshore benefits**) and to the foreign vessel operators (**offshore benefits**).

A long-term goal for an 'offshore' industrial fishery should be the transfer of economic benefits to the coastal state economy. This process of bringing the industrial fishery 'onshore' can be addressed along several coordinated lines of action, all of which have MCS dimensions:

- a) Ownership, investment and licensing
- b) Transshipment, landings, bunkering and supplies
- c) Employment and training

Box 6. Distribution of impacts and benefits from the distant-water industrial fisheries ⁴³	
To coastal state - 'onshore'	To foreign economy - 'offshore'
Sales of fishing licences/ access fees Transshipment fees Employment at sea Employment on land Fish supplies for local markets (may also disrupt markets for local artisanal producers) Agency fees Company (agency) taxes Destruction of inshore stocks (negative) Destruction of artisanal fishing gear (negative) Pilot and port fees	Foreign exchange from exports Supplies to vessels (part) Sales of fuel / fuel discounts Skilled crew salaries / employment opportunities Capital investment in vessels and shore facilities Income taxes from crews and companies Company profits Training and technology transfer Repair of vessels, supply of parts Fleet management skills and experience Resource information Raw materials for processing Market penetration and marketing know-how

Ownership, investment and licensing. Ideally, short term licences should be discontinued and only vessels which are permanently based in the country given licences for demersal fishing, unless the fishery is highly seasonal. Only vessels which have a strong economic link with the coastal states should be given preferential access rights, or reduced licence fees. Local ownership or flagging of vessels gives no assurance of a transfer of economic benefits. More valid criteria include employment of local crew, payment of local taxes, purchase of supplies and fuel locally, and local processing, or handling of catches.

Transshipment, landings, bunkering and supplies. Ideally, all catches should be landed. However, in countries which lack port facilities, have high cost structures, have poor banking facilities, and lack adequate fish quality certification, some form of transition regime is necessary. Landings do not necessarily mean physical landing of products, but strict control of transshipment. Export does not necessarily mean passing through full local customs formalities, but that the country has full knowledge of the value of the products exported with a view to retaining a fair compensation either through licence fees or other charges. Bunkering and supply does not necessarily mean that vessels must come to port to refuel, but that there is strict control over offshore bunkering and that vessels which refuel offshore do not have a price advantage over those which refuel in local ports. Harbour dues and port charges must be reasonable and local suppliers given an opportunity to supply goods and services.

Employment and training must be an integral part of the licensing agreement. Fleet management and local accounting for fleet operations is an integral part of the technology transfer involved.

(ii) Increasing direct returns while reducing fishing effort

The main idea is to reduce fishing effort while increasing, or at least maintaining the revenue from licence fees. The following calculations show the principle:

$$\begin{aligned}
 &200 \text{ licences at US\$100/GRT} \times \text{average of 100GRT per vessel} = \text{US\$2 million} \\
 &100 \text{ licences at US\$200/GRT} \times \text{average of 100GRT per vessel} = \text{US\$2 million}
 \end{aligned}$$

However, with a reduced number of vessels each vessel will catch more per fishing day and be more profitable. Thus the licence fee can continue to be increased up to a certain limit. A key management

⁴³ Adapted from: Kelleher, K., 2000. *Addressing the Issues. Fishery sector strategy in Sierra Leone*. European Commission / Government of Sierra Leone / Megapesca Lda. Freetown, March 2000.

measure is therefore to gradually increase the licence fees while carefully monitoring the total revenue. This requires a review of strategies regarding access agreements.

4.2.2. **Efficient use**

A number of approaches⁴⁴ can be taken to determine the most effective suite of MCS assets and make efficient use of these assets, including:

- ensuring input from enforcement authorities early in deliberations of new fishery management plans and regulations so that the management measures are enforceable and that there is adequate financial provision for enforcement;
- targeting⁴⁵ chronic violators⁴⁶;
- concentrating enforcement measures on the most common violations;
- extending application of management measures to the post harvesting sectors; and
- substantially increasing the severity of penalties.

As the capital and operating costs of patrol vessels and aircraft constitute the highest component of MCS costs there is a general consensus that these assets should be shared among cooperating government agencies (defence forces, fisheries, customs and immigration, SAR, maritime pollution):

- economies of scale and the multi-tasked nature of a single maritime surveillance agency can justify the high capital expenditure;
- other dedicated requirements would also be necessary (e.g., for air/sea rescue, customs, immigration) if a dedicated fisheries maritime surveillance service was established;
- synergies in communications, technology, security, and coordination;
- shortages of skilled and highly specialised personnel at a national level; and
- the relatively unproductive peacetime role of a navy and air force which will exist even in the absence of a fishery protection role.

4.3. **LICENCE FEES AND SANCTIONS (COMPARATIVE)**

The following table is not intended to be exhaustive, but provides an indication of comparative licence fees in the sub-region. Ideally this information should be used in conjunction with the corresponding information on catch rates and costs of catching.

Sanctions . Comparative information on sanctions would form a useful exercise. The exercise has not been compiled for a number of reasons: (i) lack of time and information; (ii) the legislation often provides minimum and maximum fines which are difficult to compare; (iii) different offences are accorded different levels of gravity in different countries; and (iv) the sanctions as described in the legislation are not necessarily applied rigorously. The following box provides one internationally agreed classification of fishery violations which may be a useful starting point for a comparison of sanctions.

⁴⁴ For further discussion see: Kelleher, K., 2001. *The costs of fisheries monitoring, control and surveillance in developing countries*. Draft for FAO Technical Paper. FAO, Rome; Oceanic Développement, 2002. *Etude de faisabilité sur la surveillance des pêches au Sénégal*. Ministère de la Pêche, DPSP, Agence française de Développement. Concarneau, mars 2002.

⁴⁵ Analysis of the boarding behaviour by two OECD countries indicates that boarding targets are essentially selected at random (approximately 90% of targets).

⁴⁶ Canadian studies show that 5-10% of fishers tend to violate 'chronically and flagrantly'.

Table 20. Comparison of licence fees in four countries (US\$ per 12-month period)

Type of fishing	Gambia	G. Bissau	Guinea	S. Leone
Bunker / supply / GRT		7		1,000*
Cephalopod/GRT	35	210	268	272
Demersal fish/ GRT	35	161	177	210
Demersal longline/ vessel		2,113		
Gill netter/ vessel			600	
Materials and support/ GRT		20		
Materials and support/ vessel				1,000
Midwater trawl/ GRT				210
Motherships, canoe support/ GRT		20		
Motherships, canoe support/ vessel				20,000
Pole and line/ vessel	1,054	1,756	15,000	
Reefer/ GRT		10	153	
Reefer/ vessel				10,000
Shrimp/ GRT	45	252	237	272
Small pelagics seine/ GRT		21	60	15,000*
Small pelagics trawl/ GRT		28		
Tuna longline/ vessel	1,054	1,831	600	12,000
Tuna seiner/ vessel	2,162	3,727	20,000	18,000

Note: The licence fee calculation methods vary between countries and some adjustments have been made for comparative purposes. *per vessel

Box 7. A CFP/ NAFO compatible classification of fishery violations

Cooperation with the control authorities: obstructing the work of national and Community fisheries inspectors or observers; falsifying or destroying evidence;

Conditions which must be met when fishing: fishing without holding a fishing licence or permit issued by a Member State or the Commission; falsifying the content of these documents; falsifying or concealing the name, registration or identifying marks of the vessel;

During fishing operations: using prohibited gear or fishing methods; fishing for stocks which are subject to a moratorium or fishing prohibition; unauthorised fishing in a specific zone and/or during a specific period; failure to comply with the rules relating to the keeping on board or the conservation of fishery products and the rules relating to transshipment;

Monitoring resources: falsifying data in logbooks, landing declarations and sales notes; tampering with the satellite-based vessel monitoring system; failure to comply with the rules on remote transmission of vessel movements;

The marketing of fishery products: landing, placing for sale and transporting fishery products not meeting the marketing standards, in particular those concerning minimum sizes.

4.4. THE POSSIBILITY OF SHARED SUB-REGIONAL MCS ASSETS

4.4.1. Cooperation on VMS

This section addresses three questions:

- Should the countries of the sub-region cooperate on VMS?
- What are the alternatives to cooperation
- If cooperation is necessary, what form should it take?

The following table provides an overview of the status of VMS in the sub-region.

Table 21. VMS in the sub-region

Country	VMS situation
Cape Verde	None, no plans. No capability (technical, human resources) to receive VMS information
Gambia	None, no plans. No capability (technical, human resources) to receive VMS information
Guinea Bissau	None, no plans. No capability (technical, human resources) to receive VMS information
Guinea	None. No immediate plans, but has been considered. Current focus is on coastal radar.
Mauritania	None. Awareness at technical level of need to acquire VMS in medium term. Likely to initiate studies and plans in medium term. Current focus is on coastal radar.
Senegal	Argos installed by private operators ⁴⁷ on approximately 60 vessels. Some operators have ceased use due to low profitability. Decision in principle by DPSP/ MP to acquire VMS capability already made. Pilot Argos system may be installed during 2002 in cooperation with private sector. Will complement rather than substitute coastal radar and other MCS initiatives.
Sierra Leone	None. No ability to receive VMS information. Mentioned in ADB discussions.

(i) Should the countries of the sub-region cooperate on VMS?

There are several reasons for an emphatic 'yes' to this question:

- There may be considerable cost savings in terms of capital investment and operating costs. A single system can readily accommodate all 1,500-2,000 industrial vessels in the sub-region;
- Economies of scale can justify the construction of a ground station(s) in the sub-region, further reducing costs, increasing technology transfer and enhancing efficiency;
- Vessels that operate in more than one Member State require a harmonised VMS system;
- Member Countries which do not have VMS may act as havens for pirate vessels;
- Modern technology can assure the confidentiality of information which is the property of the individual countries; and
- No Member State is as yet committed to a particular VMS system.

(ii) What are the alternatives to cooperation

The alternative to sub-regional cooperation on VMS is that each Member State will install its own VMS system. Each country (or the vessels fishing in that country) must bear the cost of a complete system. Vendors of competing systems will probably provide pilot systems at a discount in an effort to gain the market for different proprietary products. The different systems may encounter difficulties in communicating, or sharing information with each other. Vessels fishing in more than one country (e.g., tuna vessels) may encounter technical difficulties when moving from one EEZ to another. Both capital and recurrent costs to the sub-region are likely to be substantially higher.

(iii) If cooperation is necessary, what form should it take?

The answer to this question is beyond the scope of this report. However, two quite different models of cooperative VMS can be cited: EU and FFA.

EU model In the EU each Member State operates its own VMS with respect to its own vessels. All vessels >24m are obliged to operate VMS. Vessel operators can choose among suppliers, but the VMS units supplied must conform to certain standards agreed at EU level and specified by EU legislation. Thus in the case of France Emsat supplies transceivers to 54% of the fleet, Inmarsat supplies 26% and Argos supplies 20%. VMS information is coordinated in the Fisheries Monitoring Centres (FMCs) of each Member State. FMC software interprets the signals from all types of transceivers. National FMCs are linked by X25. If a French vessel is operating in Irish waters, the French FMC automatically sends the

⁴⁷ SOPASEN, Bertome, Africamer, Sénégal Pêche, Carton.

position information to the Irish FMC. Both⁴⁸ CCAMLR and NAFO VMS arrangements have an essentially similar structure. Applied to the SRFC countries, it means that each country will develop its own VMS system independently and attempt to share certain information at a later stage.

FFA model. The FFA system is quite different and applies essentially to non-FFA-flag tuna vessels operating in the waters of FFA Member States. Rather than having each of the 16 small island states operating its own VMS, the FFA operates a single system on behalf of all the states. Information is provided to the Member States over secure links. Thus the FFA system is a single, cooperative, international, and centralised system, while the EU has a national decentralised system with standardised information exchange as specified in EU legislation.

The FFA model presents considerable advantages in terms of cost savings, efficiency and coordination. However, it requires a major political commitment to join forces, and to turn the SRFC into a modern, highly efficient organisation. Such a project could be developed for funding by multilateral financial institutions.

It is recommended that the SRFC countries carry out a joint study of the options available and the advantages and disadvantages of each. Suppliers and potential funding agencies could participate at a seminar on the subject.

4.4.2. Cooperation with regard to other capital investment

At least two other forms of cooperation can be envisaged: on patrol vessels, and on coastal radar systems. These are selected because of the high capital and recurrent costs involved, and because of the need for cooperation to improve control of vessels operating in areas close to international frontiers.

(i) A shared offshore patrol vessel for the ‘southern’ countries

Additional offshore patrol capability is required for the ‘southern’ group of countries (Guinea Bissau, Guinea and Sierra Leone). Current thinking is that each country should acquire its own offshore surveillance capability and that political, operational, and financial considerations exclude the possibility of a single offshore patrol vessel serving all three countries.

However there are also formidable obstacles for each country to acquire its own patrol vessel(s) and ensure that they remain operational. Guinea already has a patrol vessel project in preparation, although funding (AFD/ ADB) remains problematic. Should Guinea acquire an offshore patrol vessel then the other countries could potentially make use of the vessel on a charter basis. The following paragraphs briefly explore the possibility of a shared patrol vessel.

A somewhat smaller version of Mauritania’s Arguin (for characteristics see section 9) would appear to be an type of ideal and could contribute to substantial coverage of the combined EEZs. The key characteristics are its relatively low operating cost compared to a conventional military type patrol vessel, and its ability to stay at sea for 25-30 days with conditions of satisfactory crew comfort.

The vessel would be managed by a company jointly owned by the three countries. To avoid internal disputes over personnel, the management team would include experienced expatriate officers (e.g., ex-naval personnel) and fleet management personnel responsible for overall management. Naval and fisheries officers from each country would be seconded to the team. These officers would be responsible for

⁴⁸ Several other models can also be referred to, e.g., see: CCAMLR conservation measure 148/XX Automated Satellite-Linked Vessel Monitoring Systems (VMS); NAFO Conservation and Enforcement Measures. Serial No. N4204 NAFO /FC Doc. 00/1.

coordination with national authorities. The project would include a training component. The vessel would spend approximately equal time in the waters of each country.

The project would be financed by a loan from the ADB and supplemented by donor finance as available. However the donor finance should preferably not be tied to procurement of the vessel from a particular country. Each country would be party to the loan agreement. The operational budget would be financed by annual contributions from each country and backed by access to loan finance, i.e., in the event that a country's contribution is not paid in a timely manner the company could draw on the loan facility.

(ii) Coastal transboundary radar

Within the sub-region coastal radar is used for at least three control targets: detection of incursions of industrial vessels into areas reserved for artisanal fisheries; detection of fishing activities in closed areas such as marine parks; and frontier controls which may also facilitate customs and immigration tasks.

In principle coastal radar stations placed at strategic frontier locations can service both countries. The southern group of countries all have plans to install coastal stations, ideally equipped with radar, radio, and inshore patrol vessels. Bilateral discussions can address the possibility of sharing such facilities, or the information provided by the radar installations.



PART II. COUNTRY PROFILES

5. CAPE VERDE

5.1. ECONOMIC IMPORTANCE AND THE STATE OF THE FISHERIES

The fishery sector is relatively important in Cape Verde employing approximately 5% of the workforce, accounting for up to 30% of national exports, and contributing to the high national fish consumption (18 kg/yr). The sector is one of the few with potential for economic expansion and plays an important role in the maritime economy of the islands.

Table 22. Indicators for Cape Verde 's fisheries

Population (1000)	434	EEZ (km ²)	734,265
Population growth rate	2.4%	Continental shelf 200m (km ²)	5,394
Per capita income (US\$/yr)	1,200	Coastline (km)	1,040
Fisheries sector % GDP	1-2%	Estimated resource potential	33-45,000
Value of landings (local) (million US\$)	10.7	- demersal finfish	3-5,000
Value of fish exports (million Esc)	190-280	- crustacea	100-120
Fish exports (1000 tonnes)	1,200-3,100	- large pelagics	25-30,000
Value of fish exports as % total exports	30%	- small pelagics (coastal)	10-12,000
Fish consumption (kg/capita)	18.8	No. artisanal vessels (1999)	1,267
fish as % animal protein	15%	No. industrial CV flag vessels (2002)	27
Industrial processing plants (tuna/ sm. pel.)	2	No. industrial non-CV flag (1998-02)	50-100
Canned products (tonnes/yr - 1999)	237	Estimated total catch/ landings (2000)	10,821
Sector employment	8,800	- artisanal catch/landings	6,977
No. of fishermen	6,167	- industrial catch/ landings	3,844
- artisanal	4,283	Estimated tuna catches	3,430
- industrial/ semi-industrial	700	Estimated small pelagics catches	3,100
% of population employed in sector	5-6%	Estimated demersal finfish catches	950

Sources: MAP, Praia Round Table documents; Lascano, Dez, 2000; other.

The fisheries of Cape Verde are distinctly different from those of the other states in the sub-region. The small continental shelf and the low primary productivity of Cape Verde's oceanic waters limit the biological potential of Cape Verde's fisheries. The total resource potential is estimated to be in the order of 33-45,000 metric tonnes, dominated by tunas, small pelagics and demersal finfish. A small but important lobster fishery exists.

The resource⁴⁹ potential reflects the biological estimates. However the economic potential is constrained by high costs, shortage of tuna baitfish, seasonality of the pelagic resources, limited trawlable fishing grounds (1,300 nm², of which 340 nm² are <50m in depth) and growing fishing pressure on the demersal finfish and shellfish resources. Aquaculture (e.g., ongrowing of tuna) may offer some economic potential.

According to ICCAT all major tuna and HMS resources in the region are either fully, or over-exploited. The INDP has indicated that a moderate expansion of the fisheries for small pelagics and demersal finfish can be supported. The lobster fishery (two distinct species and fisheries) is overexploited, at least on a local level.

⁴⁹ For detailed discussion see: INDP, 1999. *Investigação e gestão halieutica em Cabo Verde*. Actas de reunião 1996.

5.2. FISHING ACTIVITIES

Three fleets exist: the artisanal fleet of approximately 1,257 vessels and 4,283 fishermen in 2000; a fleet of 75 industrial and semi-industrial vessels (10-25 meter). Artisanal catches have gradually increased to almost 7,000 mt in 2000. Despite an increase in total catch and effort the estimated CPUE has not declined (2000). However, the CPUE is a kg/ voyage indicator, which may not reflect a possible increase in real effort (longer fishing trips, improved gear and fish-finding equipment). Industrial CPUE shows an apparent decline (see Table 25).

The first of a series of new pole and line vessels will be delivered during 2002. In order to achieve economic viability, the vessels will probably fish outside Cape Verde waters for part of the year. Some doubts have been expressed concerning the economic viability of these vessels.

Table 23. Industrial vessels licensed in Cape Verde in 2001

Fishery	Cape Verde	Spain	France	Portugal	Japan	Total
Pole and line		7	5			12
Seine		5	15			20
Longline		52		10	8	70
Demersal and pelagic*	17					17
Total	17	64	20	10	8	119

*Note: a range of gears used including purse seine for small pelagics, lines, traps, pole and line, gill net, bait nets.

The average size of the Cape Verde industrial vessels is 16 meters and 55 GRT indicating that they are quite different from the other industrial fleets in the sub-region. The gears used and the small size, and relative unimportance of the trawl fishery, and the island nature of the economy also distinguishes the industrial fishery from others in the region. Over 95% of the local industrial catch comprises pelagic species, approximately half of which is tuna. The trawl fishery targets *Lithognathus*, *Pagellus* and *Priacanthus* species primarily on the Boa Vista bank.

Table 24. Reported catch by species group in 2000 (Cape Verde vessels)

	Artisanal	Industrial	Total	%
Large pelagics	2,194	1,742	3,936	36%
Small pelagics	2,931	1,892	4,823	45%
Demersal finfish	1,224	90	1,314	12%
Lobster	8	29	37	0.3%
Other	620	91	771	7%
Total	6,977	3,844	10,821	100%

Table 25. Catch and effort information for Cape Verde fisheries (1996 -2001)

	1996	1997	1998	1999	2000	2001	2002
Artisanal catch (m. tonnes)	4,912	4,920	5,241	5,968	6,977		
Artisanal effort (kg/ trip)	36	35	35	39	39		
Industrial production (C. Verde flag)	4,243	4,707	4,218	4,403	3,844		
Industrial effort (kg/day)	1,238	1,133	787	871	797		
Reported EU catches (m. tonnes)		775	1,002	215	589	151	351

A longer time series than that presented in the above table shows an increase in industrial (vessels over 11m.) landings of 87% in the 1990-2000 period, compared to an increase of 11% for the artisanal fishery. The fishery sector enjoys subsidised credit, untaxed fuel and fishing materials.

5.3. MCS INSTITUTIONS

The Directorate General of Fisheries forms part of the Ministry of Agriculture and Fisheries. The Direcção de Control de Qualidade e de Fiscalização is responsible for MCS matters. The Studies and Planning Unit deals with policies and plans for the entire ministry. The Instituto Nacional de Desenvolvimento das Pescas undertakes both⁵⁰ development projects and provides the scientific advice for fisheries management.

The Guarda Costeira⁵¹ (GC) is part of the defence forces under the Ministry of Defence. It is charged with the patrolling of Cape Verde maritime and air space and has broad competence for combating all illegal activities, including fisheries activities, for SAR coordination, and for implementation Cape Verde's obligations under relevant treaties. The Policia Maritima supervise the security of the ports.

5.4. FISHERY PROTECTION

5.4.1. Violations and sanctions

No violations by industrial fishing vessels have been sanctioned in Cape Verde. Regulations on minimum sizes of for prime fish, retention of berried lobster, and closed seasons on some species are not applied. The regulation⁵² against lobster fishing using compressed air is applied. The regulations on licensing are not strictly applied and numerous Cape Verde industrial vessels are fishing without licences. In April 2002 only 10 of the 17 vessels licensed in 2001 had been issued licences, but many are known to be actively fishing, and even supplying catch information to INDP. Whatever the reasons, whether bureaucratic, or attributable to simple negligence by the vessel operators, this basic control should be effectively enforced. Entry and exit reporting, and logbook returns by EU vessels are incomplete (see Table 4).

Subject to the procedures of the penal code⁵³ infractions can be 'judged' either by the minister (fines only), or by the tribunals.

5.4.2. Capabilities

The Directorate employs 17 public servants. No fisheries officers are specifically assigned to MCS duties, although the Directorate has a legal advisor. There are no Directorate officers in the field, i.e., all field work is done by INDP, or by the Captania dos Portos. One officer compiles information from the foreign fishing vessels using simple but effective spreadsheets. Staff positions exist but are not financed because of shortage of funds. One observer has recently been placed on a longliner. The current focus of the Direcção is on establishing the quality control regime for export to the EU. The proposed recurrent budget for the Direcção for 2002 is US\$165,000, of which over 70% is for personnel costs.

The Guarda Costeira is a force of 150 personnel. There are about 20 officers and 90 marines (fusileiros), of which approximately 50 'fusileiros' are trained for boarding at sea. Twenty four staff, including 6 pilots are assigned to the aircraft and operated in close liaison with TACV. Approximately 60 vacant positions exist.

Aircraft. The GC operates one Dornier 288-212 patrol aircraft, ideally suited to the requirements of Cape Verde and the sub-region. Operating costs have increased from US\$1150/ hour (charter fees for SOCU) to

⁵⁰ Some conflict of objectives is apparent (see Catanzano, J., 2001. Examen des politiques et strategies d'aménagement et de developpement des peches. TCP/CVI/0065).

⁵¹ Decreto-Regulamentar nº14/97. 'A Guarda Costeira, adiante designado por GC, é a componente aero-naval das Forças Armadas destinada à vigilância, fiscalização e defesa do espaço aéreo e marítimo nacionais, organizada na dependência directa do Chefe do Estado Maior das Forças Armadas'.

⁵² Portaria 34/98.

⁵³ Art. 169 do Código do processo Penal.

US\$1,400-1,500 per hour due to increased insurance and fuel costs. A second aircraft (Banderante) is out of service and the GC hope to replace it with a second Dornier. The Dornier was acquired second hand at a cost of US\$1.8 million including the costs of some upgrading, overhaul, and essential spare parts.

Surface patrol. The GC operate 4 patrol vessels of which the Vigilante is the only vessel suitable for extended offshore patrol because of the large swell and exposed and windy conditions in Cape Verde during much of the year (see table). The Vigilante has been used by SOCU for training in maritime patrol and boarding and is considered a suitable vessel for Cape Verde by SOCU and the GC. The GC also operate 6 inflatables (not rigid) equipped with Mercury outboards (25-45 kns).

Table 26. Summary technical specifications of the patrol vessels and aircraft

Vessel	Vigilante	Sargo/ Tainha	Espadarte	Dornier aircraft
Class/ Length (m)	Kondor Class 52	Shanghai class 26	Petersen Class 23	Model 228-212
Beam (width) (m)		4.4		
Hull	Steel	Steel	Aluminium	
GRT	400	55		
Speed (knots)	12-17	19		80-90 kn
Autonomy	15 days	700-1000 nm	2-4 days	Max. 6 hs, effective 4.5-5
Crew	30	9	7	6 (usual)
Condition/ comments	GMDSS, VHF, 1 x Kelvin Hughes radar, telex being installed	VHF. Constrained by high swells (>1.5 m)	VHF. Constrained by high swells (>1.5 m)	*2 x VHF, HF, radar, stormscope, mountain sensor, GPS attachment for camera not fitted
Photo available	Yes			Yes

*technical specifications of equipment available.

Radio. The four larger vessels are equipped with VHF radio. Praia headquarters operates 1 Furuno 500 VHF SSB, a scanner, and a Furuno 2510 VHF. The GC has access to the army's VHF and fax on São Vicente. The Merchant Marine operates 1 radio.

The GC has 2 vehicles, barely enough to function. The SOCU-supplied computer is located in the Guarda Costeira and aerial surveillance information is logged there. One additional computer and 4 old computers are available. Priorities for the GC are to replace the Banderante, to install secure communications between vessels, shore bases and aircraft, and to replace some of the smaller vessels with a more robust offshore patrol vessel. Replacement computers would be of use.

5.4.3. Activities

Licences are issued on an annual basis, i.e., short-term licenses are not issued. Foreign flag vessels do not receive physical checks and only photocopies of the vessel characteristics are received for licensing purposes. There is no fishing vessel register (legal instrument). Lists of vessels and their characteristics are maintained by the Directorate.

Reciprocal fishing agreements exist with Senegal and Guinea Bissau under which a small number of pole and line tuna vessels are licensed. Hot pursuit agreements exist with Senegal and Mauritania.

The INDP⁵⁴ collects and analyses all statistical information on national fisheries. Regular statistical bulletins are produced. Complete statistics for 2000 have been published. The Directorate collates the statistical information on foreign fisheries.

⁵⁴ As the INDP is located on Mindelo it was not visited during the course of the mission.

Safety at sea. While no detailed records of loss of life at sea are available, the exposed, oceanic and island nature of the fishing operations poses an exceptionally high risk to fishermen⁵⁵. Reference is made to the relevant section on Senegal in this report for a summary of possible measures to improve safety at sea for fishermen.

5.5. IMPROVING MCS

A number of the recommendations made with respect to other countries apply equally to Cape Verde and are not repeated here.

As a priority Cape Verde needs to enforce existing regulations in the local fisheries. Current controls over foreign fishing activities has little to no effect, and unlike the other countries in the sub-region, the extent of illegal (pirate) fishing is virtually unknown. It is suggested that part of the 60 flight hours 'owed' to AFR/013 is allocated to Cape Verde for fishery surveillance of the offshore tuna fishing activities. Ideally this should be done in cooperation with aerial surveillance patrols by Mauritania and Senegal operating to the edge of their 200-mile EEZs to obtain a broader overview of tuna fishing activities (particularly in the absence of an EU/ Senegal fisheries access agreement). The failure of the EU vessels to supply catch information should be regularly pursued with the EC Delegation and at ICCAT. Failure to supply the catch information should be met at least with the threat of non-renewal of the licence.

Every efforts should be made to continue the valuable role Cape Verde plays in supporting regional MCS efforts through the use of the aircraft and patrol vessel. Selected elements of the recommendations made in the Praia workshop on block agreements can be implemented with other SRFC partners, in particular the formation of a joint position on tuna in international for a such as ICCAT and COFI.

Development assistance will continue to have an important role: with the US Coast Guard, the Marinha Portuguesa, and in training of aviation mechanics in Portugal. Shortage of funds constraints surveillance activities and some of the funds available for MCS under the EU fisheries access agreement can be directed to surveillance activities. A friendship treaty with Spain can possibly be used for training of personnel. Other opportunities for cooperation can be explored, e.g., with UK and the USA.



⁵⁵ 'Com 17 anos e só pelo e osso. Iô fica a nadir detro da sweat de Chicago White Sox. E de pouco falas. Crisálido fala pelos dois: "O pai dele morreu no mar. Pescava no Maio com dois colegas num bote a remos. Os corpos não apareceram. Iô baixa os olhos e confirma a versão com a cabeça'. A Semana, April, 05/2002.

6. THE GAMBIA

6.1. ECONOMIC IMPORTANCE AND STATE OF THE FISHERIES

A socio-economic study conducted in 1997 on artisanal economic operators showed that about 200,000 people benefit directly or indirectly from artisanal fisheries and related activities. The value of exports has fluctuated in the range⁵⁶ of US\$1.7-1.9 million in the 1998-2001 period. The following table provides some key indicators for the Gambia and its fisheries.

Table 27. Economic and fisheries indicators for the Gambia

Population 2000 (million)	1.3	Continental shelf 200m (km ²)	4,000
Population growth rate	3.0%	Coastline (km)	70
Per capita income (GNI)(US\$/yr)	340	Estimated resource potential	80-92,000
Fisheries sector % GDP	2.4-12%	- demersal finfish	15,000 - 17,000
Sector contribution to gov. rev %	7.0%	- crustacea	1000
Export value (million Dalasi, 1997)	39	- small pelagics (coastal)	65,000 - 75,000
Exports (1000 tonnes, 1998-01)	1.8	No. of vessels	
Value of exports 1998-01 (US\$ million)	1.7-1.9	- artisanal (1999)	2,000
Fish consumption (kg/capita)	20	- industrial national flag (2001)	58
Sector employment	3,100	- industrial foreign flag (2001)	13
No. of fishermen	2,000	Estimated total catch/ landings (2000)	36,104
% of population employed	238.5%	- artisanal catch/landings	9,237
EEZ (km ²)	19,500	- industrial catch/ landings	26,867

Sources: WB, Fisheries Department

Research cruises⁵⁷ by the "R/V DR. FRIDTJOF NANSEN" are the only sources of current data/information on marine fish (mainly small pelagics) resources of The Gambia. The most comprehensive demersal survey was carried out by the Spanish Institute of Oceanography in 1986. The most recent biomass estimates are: demersals 22,000 tonnes (1995), and small pelagics 165-216,000 tonnes. Estimates of potential (= MSY) are given in the above table.

Most⁵⁸ of the marine fish stocks are transboundary in nature. It is strongly recommended that discussions be initiated with Senegal on harmonised management plans for the key industrial fisheries, shrimp, demersal finfish and possibly for small pelagics (see section 2.5.2).

6.2. MCS INSTITUTIONS

The Department of Fisheries has responsibility for MCS. The Gambia Marine (navy) is part of the military establishment under the Ministry of Defence. Police, customs, immigration, and the port authority have minor roles in MCS.

6.3. FISHING ACTIVITIES

Three main fisheries exist: the industrial fishery, the artisanal marine fishery, and the important artisanal river fishery. Many of the Gambia-flag industrial vessels are owned, or operated by non-Gambians. The tuna vessels operate under the Japan Tuna Fishing Agreement, while Senegalese vessels operate under a reciprocal agreement with Senegal. The EEC/Gambia fishing agreement expired in June 1996.

⁵⁶ WB statistics show a value of US\$3 million compared to this value originating from the Fisheries Department.

⁵⁷ Jointly financed from Norwegian multilateral development assistance funds and from UNDP with FAO under the framework of the projects, GLO/92/013 and GCP/INT/730/NOR

⁵⁸ Inland fisheries make an important contribution to artisanal fish production.

Table 28. Numbers of industrial fishing licenses issued by year and flag state

Year	The Gambia	Senegal	EU	Japan
1991	102	17	45	-
1992	69	24	26	-
1993	70	19	32	21
1994	36	21	22	16
1995	33	15	20	5
1996	43	20	3	14
1997	54	18	-	6
1998	46	20	-	5
1999	57	26	-	3
2000	71	25	-	3
2001	58	12	-	1
2002	21	10	-	2

Source: Department of Fisheries

Approximately 60% of the Gambia's artisanal fishermen are Senegalese nationals, many permanently resident in Gambia. This presents considerable problems for Gambian control over 'international' artisanal fishing. Senegalese long-range pirogues also pass through Gambian waters en route to the Casamance and Bisajos. Despite an obligation to land a percentage of the catch in Gambia, industrial vessels are constrained by a lack of a fishing port and cold storage facilities. Less than 20% of the vessels are understood to land fish in Banjul. Between 26-34% of Gambia's annual fish production derives from the artisanal fishery. Much of the production is small pelagics for the local market and prime fish for the important tourist industry.

Table 29. Fish production in the Gambia, 1990 -2001 (m. tonnes)

Year	Industrial	Artisanal	Year	Industrial	Artisanal
1990	26,401	11,573	1996	8,372	30,510
1991	23,175	20,270	1997	7,988	30,243
1992	6,060	14,035	1998	7,012	26,533
1993	7,736	17,560	1999	10,249	29,743
1994	7,752	19,917	2000	9,237	26,867
1995	6,937	20,799	2001	na	29,861

Authorised mesh sizes conform to the sub-regional norms as follows:

Table 30. Authorised mesh sizes in mm stretched mesh

Demersal finfish	70	Tuna seine	140
Coastal pelagic	40	Gill nets	60
Coastal shrimp	50	Shrimp 'stow nets'	25
Deep-water shrimp	40	Purse seine small pelagics (consumption)	40
Cephalopods	70	Purse seine (bait)	14

6.4. FISHERY PROTECTION

6.4.1. Violations

According to observer reports, the most common violations are the use of illegal trawl mesh and fishing inside the 7 nm zone reserved for artisanal fishing.

Table 31. Indicative frequency of detected violations in the Gambia

	SOCU Code	1995	1996	1997	1998	1999	2000	2001
Zone	12	8	25	16	5	7	62	3
Licence expired	20	45	24	38	5	2	38	5
Identification/ markings	29	1		2			23	
Transshipment	56					1		
Total		54	49	56	10	10	123	8

Source: SOCU database. Note that the violation records in the database derive primarily from aerial surveillance and consequently mesh violations are not recorded.

6.4.2. Sanctions

Approximately 5% of cases go to court. Most detected violations are settled out of court by request of the vessel operator/ owner. An inter-ministerial committee which includes representatives of the Fisheries Department, the navy and the Defence Ministry recommends the administrative sanction to the Minister, who makes the final decision. Fines are paid to the Accountant General and the Fisheries Department instructs the navy to release the arrested vessel after reception of the receipt. Because of logistic difficulties in handling confiscated catch, the catch is not physically forfeited, but a monetary value is added to the fine in lieu of the confiscation. Under the Fisheries Act (Art. 41) operators of vessels fishing illegally can also be imprisoned.

Table 32. Numbers of vessels sanctioned by year and type of offence (1997 -2001)

	1977	1998	1999	2000	2001	Total
Mesh				3	4	7
no licence		6	1			7
Improper stowage of gear*	1		4			5
unauthorised processing					1	1
Zone		1		3		4
Total	1	7	5	6	5	24

Source: Fisheries Department. *Mostly Senegalese vessels 'in transit (?)'.

Comparison of the above two tables indicates a pressing need for surface patrols and the use of aerial surveillance information to sanction offenders. Only one vessel has been sanctioned exclusively on the basis of aerial evidence. All sanctioned vessels were arrested by the navy.

Table 33. Fines paid by year and type of violation 1997 -2001 (in Dalasi)

	1977	1998	1999	2000	2001
Mesh				2,086,160	1,551,450
no licence		8,572,220	1,500,000		
Stowage	400,000		2,861,500		
unauthorised processing					45,000
Zone		500,000		1,948,900	
Grand Total	400,000	9,072,220	4,361,500	4,035,060	1,596,450

Source: Fisheries Department.

6.4.3. Capabilities

There are approximately 14 fisheries officers in the Department, and over 100 observers have been trained, of which about 40 are used at any one time. The MCS section has 3 officers, though most staff fill a multipurpose role. Observers are paid directly by the fishing companies at a rate of US\$ 190/ month. No patrol aircraft is available, but extensive use is made of the SOCU (AFR/013) charters, at times in combined operations with Senegal. The Fisheries Department has no patrol vessels. There is no coastal radar. Radio equipment is operational, but as cell phone coverage extends all over Gambia, they are tending to replace radio communication. Four 4x4 vehicles and 3 motorcycles exist in headquarters and

are used in a multipurpose role. No boats are available on the river. The Department lacks GPS, walkie-talkies, protective clothing, uniforms, and needs additional mesh gauges.

The existing naval patrol vessels are understood⁵⁹ to be non-operational. A serious fire gutted the Tracker Class patrol vessel *Jato*, and its future is unclear.

6.4.4. Activities

Fisheries officers conduct quayside inspection of vessels on a yearly basis. Observers are placed on all vessels. The transit of Senegalese vessels through Gambian waters can be a source of problems⁶⁰ both for the vessels and the Gambian authorities. It is suggested that arrangements are made between the two governments so that the Senegalese authorities oblige their transiting vessels to provide entry/ exit radio reports to the Gambia.

Control over artisanal fishing is weak. Pirogues are not registered, although there is pressure from the security forces and beach committees to do so, partly as a source of local revenue. Communities help enforce the ban on beach seining and there are some locally-established closed areas. Minimum commercial size limits are not enforced for the artisanal fisheries because of the practical difficulties in applying the regulations.

Coordination. No formal protocols exist between the navy and the Department of Fisheries, but there is constant communication between the two. The inter-ministerial committee reviews the dossiers of arrests and related MCS affairs. There is a joint commission on surveillance with Senegal. It is reported to work effectively, but the cooperative activities are occasional, rather than based on a permanent plan.

6.5. IMPROVING MCS

A number of suggestions for improved MCS have been made in the above sections. It is crucial to have close collaboration with Senegal at all levels. Ideally a harmonised management plan for the transboundary resources should be prepared, in particular for the valuable shrimp resource⁶¹ which has declined in recent years. Management measures do not have to be identical but simple, transparent and verifiable, e.g., limits on the numbers of licensed shrimp vessels. The SRFC may have an important role to play in verification of measures agreed under bilateral management plans.

Radar information can usefully be shared with Gambia, e.g., information from Kafountine on vessels apparently about to transit. Ideally Gambia should acquire a radar capability. This facility could possibly be shared with the port authorities, police and navy.

The lack of a fully functional patrol vessel greatly constrains controls at sea as evidenced by the absence of sanctions for mesh violations, or retention of juveniles on board. To enable effective coverage of both the river and the continental shelf area some compromise may be necessary in vessel design. As with other countries in the sub-region, any new vessels must be cost effective and within the budgetary capabilities of the administration. Radar coverage can greatly assist in the cost effective use of the vessel.

6.5.1. Financing MCS

A profitable and economically healthy fishery will provide a more stable financial basis for MCS, through licence fee and other revenues. Licence revenues in 2000 and 2001 totalled approximately US\$330,000

⁵⁹ Unanticipated change in the travel schedule did not permit physical verification.

⁶⁰ Malaysia encounters the same problem with Thai vessels in innocent passage. Malaysian authorities routinely board and inspect such vessels.

⁶¹ The resource is also subject to pressure from the artisanal fishermen. The Fisheries Act (as amended 1995) Ch. 5. Art 21 already makes provisions for harmonised management measures for transboundary fisheries.

per year, all of which is retained by the treasury. The revenue from fines is divided as follows: 30% to the treasury; 30% to a treasury sinking fund; the Fisheries Department receives 12.5% of which is paid to the fisheries development fund held by the accountant general; 15% to the Army welfare fund; 10% *ex gratia* payment to the navy. The Fisheries Department does not provide finance for navy patrols, which are financed from the Defence Ministry budget.

Table 34. Licence revenues (in thousands) by year and source 1991-04/2002

Flag	Gambia	Senegal	Japan	EU
Currency	Dalasi	Dalasi	US\$	ECU
1991	1,537	175		173
1992	872	218		107
1993	636	220	21	60
1994	562	244	16	32
1995	1,525	266	5	32
1996	2,312	491	14	8
1997	2,250	403	6	
1998	2,419	488	58	
1999	3,563	618	36	
2000	4,817	607	40	
2001	5,809	275	2	
2002	2,083	278	2	

The Fisheries Department budget for 2002 is approximately US\$70,000 (1.26 million Dalasi), 89% of which is the salary component, indicating that the Department has little financial capacity to increase MCS activities.



7. GUINEA BISSAU

7.1. STATE OF THE FISHERIES

7.1.1. Economic importance of fisheries

The political upheaval in Guinea-Bissau in 1998/99 adversely affected the entire economy including the fisheries sector. The fisheries sector plays an important role in the economy. Estimated fish exports were US\$1 million in 2000, or 1.5% of the total exports (US\$68 million)⁶², but the sector contributes up to 40% of government revenues. Quantitative information on the artisanal fisheries⁶³ is sparse.

However, the industrial fisheries are essentially an 'offshore economy' and the benefits accruing to Guinea Bissau arise primarily from licence fee revenues totalling approximately US\$4.36 million in 2001 (EU access fee payments excluded). Among the principal reasons for the weak state of indigenous industrial fisheries, are the lack of port infrastructure⁶⁴ and associated support services, and the economic and political instability in the country. 'Exports' take place mainly by reefer and the transactions do not enter into the local economy.

Table 35. Selected economic and fisheries indicators for Guinea Bissau

Economic Indicators		Fishery indicators	
Fisheries sector % GDP	7-10%(0.6% art.)	Estimated resource potential	106,000
Sector contribution to gov. rev %	40%	- demersal finfish (excluding <i>Balistes</i>)	50,000
Value fish exports as % total exports	40%	- crustacea	6,000
Fish consumption (kg/capita)	7 - 13	- cephalopods	4,500
Industrial processing plants	na	- large pelagics	5,000
Population 2000 (million)	1.2	- small pelagics (coastal)	41,000
Population growth rate 2000	2.2%	No. of vessels	
Per capita income 2000 (US\$/yr)	180	- artisanal (1999)	na
Sector employment	15,000	- industrial GB flag (2001)	16
No. of fishermen	2,100	- industrial non-GB flag (2001)	169
- artisanal	1,125	Indicative total catch (est. 2000)*	80,000
% of population employed		- estimated total landings	4,629
EEZ (km ²)	150500	- artisanal catch/landings	20,000
Continental shelf 200m (km ²)	45,000	- industrial catch (1994)	30,021
Coastline (km)	274		

Sources: Roche study, MinPescas, WB, Praia Round Table documents, other. Note that some information dates from the mid-1990s. *including bycatch.

No reliable and recent catch and effort time series are available. Those published in the 1996 management plan⁶⁵ show a serious decline in the CPUE. There is no reason to believe that any subsequent improvement has taken place as the numbers of licences issued, the numbers of vessels licensed, and the total tonnage licensed to fish is as high⁶⁶, or higher than in 1996 (see Table 38). Uptake of fishing opportunities by the EU vessels has been low also indicating resource depletion.

⁶² World Bank.

⁶³ *Consultoria sobre a Redefinição Participativa da Política Nacional de Gestão e Desenvolvimento Duradouro da Pesca Artesanal*. Programme pour des Moyens d'Existence Durables dans la Pêche (PMEDP). (GCP/INT/735/UK)

⁶⁴ The government has signed an agreement with the Italian company, Pomer fisheries of Dakar, to modernise the existing infrastructures and build five refrigerating chambers for Guialp. The company will operate 12 trawlers.

⁶⁵ MAP, 1995. *Plano Annual de Gestao dos Recursos Pesqueiros da Guiné Bissau para 1996*.

⁶⁶ The available statistical information is difficult to compare.

The last fisheries management plan was prepared in 1995 and indicated a TAC of approximately 98,900 tonnes, based on a resource potential estimate of 106,500 tonnes. The inability to provide accurate scientific advice was recognised in the plan, and a precautionary common sense approach was clearly established⁶⁷. The annual resource value was cited as US\$97 million (FOB, 1996 prices). The estimates exclude the *Balistes* resource (now depleted and commercially unimportant) shared with Guinea and Sierra Leone.

7.2. FISHING ACTIVITIES

Industrial fishing activities are authorised outside the 12-mile territorial sea under five different regimes: EU, China International Fisheries Corporation (CONAPEMAC), charter, national companies, and Federpesca. Senegalese vessels fish in the joint Guinea Bissau / Senegal zone under Guinea Bissau laws.

The current EU 5-year agreement⁶⁸ will last until June 2006 and is a standard EU access agreement giving €10 million per year in exchange for the following access rights: shrimp 9,600 GRT/ year; cephalopod / demersal fish 2,800 GRT/year; 40 tuna seiners; 36 tuna longliners and pole and liners. €300,000 per year is specified for surveillance activities.

In contrast to the reduced EU access, the 2002-2006 CONAPEMAC agreement specifies increased access rights for shrimp 2790 GRT/year, cephalopods 1990 GRT/year, and demersal fish 398 GRT/year. In addition to licence fees the company undertakes to make a range of investments of unstated value on a reimbursable basis.

Increases in licence fees have constrained activities of local (national) companies with 16 licensed vessels in 2001. Agreements with two Korean companies were not renewed in 2001. Approximately 16 Italian vessels operate under an agreement between the government and the Federazione Nazionale delle Imprese di Pesca.

Fee levels for the different regimes are compared below (Table 45). It should be noted that the subsidy paid by the EU and China invalidates a direct comparison of the fee levels, which ideally also requires accurate information on catches.

Table 36. Distribution of fishing licences issued in 2001 by group/ licensing regime

	Chartered	CONAPEMAC	National companies	EU	Total
Shrimp	4	12	21	56	93
Cephalopods		14	3		17
Demersal fish	11	2			13
Pelagic trawl	1				1
Tuna seine				65	65
Longline	1		1		2
Total	17	28	25	121	191

Source: MPM. Note: Table shows number of licences issued not number of vessels licensed.

⁶⁷ “Os apelos para investigacao adicional antes de introduzir os TACs podem ser apenas tacticas para adiar a implementacao de medidas e disciplina de gestao”.

⁶⁸ Protocol establishing the fishing opportunities and the compensation provided for in the Agreement between the European Economic Community and the Government of the Republic of Guinea-Bissau on fishing off the coast of Guinea-Bissau for the period 16 June 2001 to 15 June 2006. Official Journal L 019 , 22/01/2002. 302R0249 (OJ L 040 12.02.2002 p.1).

Table 37. Numbers of industrial licences issued in 2001 by flag state

Spain	80	Italy	17	others	9
China	28	France	15	Korea	5
Guinea Bissau	24	Portugal	11	Gabon	2
Total	191				

Table 38. Numbers of vessels licensed in 2000 and 2001 by fishery

Licence type/ No. vessels licensed	No. licensed 2000	No. licensed 2001	Plan recommendation 1996
Shrimp (arrasto de Camarão)	83	67	40-44
Cephalopod (arrasto de Cefalópode)	27	15	32*
Demersal finfish (arrasto peixe demersal)	36	12	25
Pelagic trawler (arrasto peixe pelágico)	10	1	
Tuna seiner (atuneiro)	30	48	
Crab fishing (carangueijo)	1		
Longliners (palangre)	3	2	
Total licensed vessels in 2000	187	145	

Source: MAP files. Note that the columns, 2000, 2001 and 1996 are not strictly comparable because some vessels do not fish a full year. * excluding 11 with shrimp licences.

The shrimp fishery is under considerable pressure as is evident from Table 38. The excess capacity in the shrimp fishery in turn impacts negatively on the other fisheries and the levels of compliance with regulatory regimes. From a sample of observer reports bycatch / discards on shrimp vessels can be as high as 87% of the catch, while shrimp may comprise as little as 20% of the retained catch.

7.3. MCS INSTITUTIONS

Five institutions⁶⁹ are involved in fisheries MCS. The Ministério das Pescas e do Mar (MPM) holds primary responsibility for licensing and monitoring of the fisheries. The Industrial Fisheries Directorate in particular prepares the industrial fishing licenses. The Fisheires Research Institute (CIPA) monitors the state of the fisheries and analyses logbooks. CIPA is responsible for the preparation of ‘fishing plans’ and fish quality control, and is to be designated as the ‘competent agency’ for the purposes of EU export approval. The Navy (approximately 500 staff) and the Capitania dos Portos (94 staff of which 20-30 work in the regions) make a contribution to the MCS efforts. The Capitania is responsible for SAR.

The **Alta Autoridade do Estado para a Fiscalização Marítima** (AA), created 1 April, 2001, is the agency charged with overall coordination and implementation of fisheries protection. The AA was established by Presidential ‘despacho’ and inherited the staff and assets of FISCAR⁷⁰. The AA is charged with protection of all marine resources (not only fisheries resources) and reports directly to the office of the President of the Republic.

The Directorate of Industrial Fisheries has a small and relatively effective staff working with 2 PCs on which licence records are held. As with most⁷¹ Member States the data is not ‘clean’ and difficult to analyse in an automated manner, e.g., vessel names are not always spelled in the same manner: Pescamar 1 = Pescamar Uno = Pescamar No. 1. It is essential that staff are given basic training in how to organise computerised information so that rapid tracking of the fisheries can be carried out with a minimum of effort. CIPA is in the process of rehabilitating premises damaged during the political upheavals and it will be some time before they can be expected to make a significant contribution. Observer data to 2000 has

⁶⁹ Selected information taken from: Magnet, M., 2001. Planification des Pêches industrielles en Guinée Bissau. GCP/INT/722/LUX.

⁷⁰ See: Decreto-Lei 9/96. Regulamento da Comissão de Fiscalização Marítima. The structure and function of the AA remain essentially unchanged.

⁷¹ Mauritania is the exception.

been computerised but not processed. No at-sea sampling takes place (e.g., species/ size composition, bycatch/ discards).

7.4. FISHERY PROTECTION

7.4.1. Physical assets of the AA and other institutions

The physical assets include: 1 x small vehicle, 4 computers, 2 radios HF and VHF (1 Furuno FS 1510 radio, operational), 1 photocopier (non-operational), and a range of basic office items. In addition to the rented headquarters building, the AA has the use of one building in the Navy base for marine stores and equipment. The rehabilitation of war-damaged buildings in the naval base may be an option for construction of a permanent AA headquarters.. Because of lack of funds, the only telephone lines operational are those of the President and the director of administration. The most valuable physical assets are the patrol vessels⁷².

All patrol vessels are operational but in relatively poor condition and require major overhauls. All are rapid 'intervention' type vessels and not designed to stay at sea for protracted periods. Specific problems are detailed below. The navy has approximately 500 staff and 1 Russian-built, steel-hulled patrol vessel. The customs also has several small open boats located at frontier posts. The PPSI (semi-industrial fisheries project) has a trawler (Ilha de Geta), which has also been successfully used for surveillance work. CIPA has 4 computers.

Table 39. Summary technical specifications of the AA's patrol vessels ((03/2002)

Vessel	Cacheu	Casini	Ilha de Caio	7 Junho
Length (m)	19.8	19.8	15.5	8
Beam (width) (m)	5	5	4.3 (1.5 draft)	
Hull	GRP	GRP	Aluminium	GRP
GRT	17.5	17.5	20.9	
Engines hp	3 x 100 hp	3 x 100 hp	2 x 450 hp	99.9 hp
Engine type	MTU 183TE92	MTU 183TE92		Yanmar 4LT-TE
Consumption (econ)	100 lit/hr	100 lit/hr		
Speed (knots)	th.= 28 act.=16	th = 28 act.=16	22, 15 is curent max.	32
Autonomy	4 days 13 kn			Basically a pleasure craft suitable only for inshore waters.
Crew	8-10	8-10	6 berths	
Radios	2 of 4	Operational		
Echo sounders	Furuno GP500		Furuno 32 nm	
GPS	not op.			
Armament			3 x machine gun	
Condition: All vessels require a comprehensive overhaul. All vessels need liferafts, flares, fire extinguishers, lifejackets.	1 motor not operational leading to steering difficulties. 32 kva Cummins generator fitted both vessels.	RIB winch – 1 operational shared between 2 vessels, motors out of balance, air conditioner not operational, toilets not operational Railings missing/ rusted both vessels	Petersen Mark IV class. Built 1994. Hull in good condition. 6m RIB w/ 50 hp outboard, RIB winch generator not operating, no life raft	Propeller damaged, rudder hydraulics leaking, hull cracking, cooling water 1 filter box missing. Ineffective ventilation. Anchor winch electronics deficient
Photo available	Yes	Yes	Yes	Yes

Note: Cacheu and Casini are identical vessels. Vessel speed is theoretical, actual speed is substantially lower. Photos are included in CD made available to SRFC.

⁷² The 4 vessels are the property of the AA/ FISCAR. The number and condition of vessels belonging to the navy was not determined.

The AA operates 3 poorly-equipped coastal stations: at Bubaque (Bijagos), Caio (western frontier), and Cacheu (estuary near Guinea frontier). The stations are extremely basic and equipped with dormitories, generators, radios, and latrines. They do not have running water. The former two have small quays. The patrol vessels are based at government quay in Bissau and are not charged for berthing. The radio installation at Bubaque is operated by the semi-industrial fisheries project and the AA may call on the military base there for additional assistance.

In summary, AA lacks a basic level of physical assets to carry out effective fishery protection. However, the main constraint is seen as the lack of recurrent funding to maintain the existing assets and only limited capital investment (e.g., in communications, training) should be contemplated without ensuring the availability of operating funds. A draft project document was prepared for submission to the ADB.

7.4.2. Human resources of the AA

There are approximately 219 persons employed in the AA, of which over half are observers on a 'casual' contract. Approximately 18 navy personnel are assigned to the AA as vessel crews.

Table 40. Human resources available to the Alta Autoridade, 2002

Educational level	Administration	Inspection	Communications	Vessel crews		Observers	Total
				Military	Civil		
University/ superior	2		1				3
Mid-level (medio)	4	4	2	2		2	14
Bachelor	1				2	1	4
11 th class						55	55
6-7 years education	4	17	2	10	15		48
<6 years education	6	10	1	4	4		25
lower, or unknown	1			2	1	66	70
Total staff	18	31	6	18	22	124	219

Table 41. Indicative monthly salaries of Alta Autoridade, 2002

Monthly salaries	1000 FCFA	US\$
Senior levels	200	282
Inspectors	112	158
Observers (base rate)	75*	106
Manual workers	65	92

*Note: Observers are paid an additional 200,000 per month sea-going allowance. However, this allowance has not been paid since 1999.

7.4.3. Procedures

The new president of the AA has not been formally appointed and the activities and decision-making capability of the AA is extremely weak. The lack of funds and delays in salary payments has resulted in a substantial breakdown of AA functions and effectiveness. No annual reports of FISCAR/ AA are available. Radios are manned from 0800-1430 approximately. Radio watch records are poorly maintained on loose paper and later transcribed to ledgers. No vessel register⁷³ has been established. Authorities are not sufficiently strict on vessel markings and checks on vessel documentation do not appear to be

⁷³ Proposed under artigo 10º da Lei Geral das Pescas (Decreto-Lei nº 6A/2000, de 22 de Agosto) with the establishment of a Serviço Nacional de Registo de Embarcações de Pesca.

adequate. Fishing licences are now endorsed by both the fisheries and finance ministries in an effort to avoid dubious past practices.

Interpretation of Decreto Lei 6-A/2000. Article 2 does not provide for extension of Guinea Bissau authority to its flag vessels operating outside of Guinea Bissau waters. Point 4. of Article 45 does not adequately cover VMS information. Penalties provided under Article 57 could be higher than those under Article 56. Judgement by a tribunal within 48 hours (Article 62) may not be a realistic timeframe. The consequences of not having a judgement are unclear.

Artisanal fisheries. Authorised agents of the Capitania dos Portos da Guiné-Bissau are responsible⁷⁴ for the control of artisanal fisheries. Consultative councils (Conselhos Consultivos Regionais de Pesca Artesanal) provided for under Article 6° of the Regulamento das Actividades da Pesca Artesanal have not yet been established. The councils are to have a role in the control of artisanal fisheries.

7.4.4. Infractions and sanctions

(i) Due process

Detected violations are reported by inspectors who prepare a dossier which is examined at a technical level. Observers are not ‘authorised officers’, i.e., they cannot initiate a legal process. The dossier is then sent to the Comissão Técnica (CT) for appraisal and emission of the ‘Auto de Noticias’⁷⁵. The CT is composed of representatives of the AA, Industrial Fisheries Directorate, Ministry of Finance, Captania, and the legal adviser to minister. The ‘auto de noticias’ is sent by the CT to the Comissão Interministerial (CI) comprised of the ministers (or representatives of the ministers) of fisheries, finance, defence, justice, and interior, which makes the decision on the administrative sanction. In general it is the ministers themselves who participate in the CI meetings. In the event of dispute, or non-payment the dossier may be sent to the tribunal (very rare). The two-committee system was established specifically to counteract previous allegations of corruption in handling of sanctions. Based on the relatively large fines paid in recent years, this system appears to be effective. Ministers are paid US\$500 per CI sitting. Sanctions may also be imposed on the vessel captains.

The processes are difficult to track as the committees produce ‘actas’ and it is the number of the ‘acta’ which is used as a reference. However one ‘acta’ may contain a decision or recommendation on several infractions. No summary information is readily available showing case-by-case details of the infractions, committee recommendations and decisions, and payment of sanctions. This does not mean that the procedures lack transparency, but rather that the administrative processes, records and summary tracking need to be improved.

(ii) Infractions

The most frequent violations as perceived by the fisheries inspectors are: no licence, expired licence, zone, trawl mesh, discards, unauthorised bycatch, and washing fuel tanks (bunker vessels). Observers report that vessels are constantly fishing within the territorial sea, and that certain shrimp vessels target fish using shrimp mesh. However, observer ‘evidence’ is rarely used for enforcement as it is considered that equal weight would have to be given to the vessel skipper’s ‘denial’. Thus a process is normally initiated only when the vessel is physically apprehended by the AA. The following tables provide an overview of the recorded violations occurring in Guinea Bissau waters.

In common with other Member Countries, the most common violations detected are zone infractions and violations related to illegal trawl gear (mostly unauthorised mesh). Guinea Bissau may also have the

⁷⁴ Point b) of n° 1 of article 40, of Decreto-Lei n° 6-A/2000, de 22 de Agosto (Lei Geral das Pescas)

⁷⁵ =proces verbal/ due process.

highest level of unlicensed (pirate) fishing. A feature of the surveillance operations is the successful use of fishing vessels equipped with RIBs as temporary surveillance platforms. Chinese and Italian-operated vessels are the main violators.

Table 42. Numbers of violations recorded by year 1999 -02/2002

Year	Number
Arrests 2002	5
Detections (including arrests) 2001	44
Detections (including arrests) 2000	26
Arrests only 1999	15

Sources: AA, Actas das Comissões. Note: Years are not comparable as quality/ quantity of the available information differs from year to year.

Table 43. Breakdown of recorded violations by type of violation (1999 -02/2002)

Type of violation	Number (1999-2002)	%
Zone	30	39%
Trawl mesh	22	29%
No licence	7	9%
Non cooperation with inspector	5	6%
Zone commun (all released)	5	6%
False declarations	2	3%
Juveniles	2	3%
Transshipment	1	1%
Bycatch	1	1%
Administrative	1	1%
Pollution	1	1%
Total in sample	77	

Sources: AA, Actas das Comissões.

Table 44. Violations as detected by different types of surveillance platforms

Year	Year 2000		Year 2001	
	no. patrols	violations detected	no. patrols	violations detected
Air (AFR/013)			12	15
AA/ FISCAR vessels	4	6	3	1
Fishing vessels	4	4	2	6

There is evidence of confusion between on one hand the Bissau and Senegalese authorities and on the other hand the fishing vessel operators with regard to the common zone. A number of arrests of Senegalese vessels operating in the common zone have been made, but all vessels have been released because of the lack of clarity⁷⁶ with regard to the fishing regime. Consideration should be given to the establishment of a fishery management plan for the common zone.

While concrete evidence is not readily available officials are aware that certain vessel operators structure their fleets and licences to facilitate illegal fishing. For example some vessels are licensed in Guinea Bissau, while other vessels controlled by the same operator, often with similar characteristics and names, are licensed in Guinea (Conakry). The combined fleet fishes on each side of the Guinea / Guinea Bissau border, sharing information on fishing opportunities, and collaborating to avoid surveillance, e.g., intruding at night into Guinea Bissau waters. Certain vessels are known to carry more than one set of vessel documents. Several actions could be considered:

⁷⁶ The difficulties with regard to on-board observers is understood to have been addressed already.

- Examination of observer records of vessel behaviour, to give clear evidence of deliberate violations and attempts to avoid controls;
- Establishment of a no fishing zone on the border, e.g., a 5 km ribbon of marine protected area
- Establishment of a joint radio and radar watch for the border area, possibly using the existing Kamsar port radar installation under a cooperative arrangement with Guinea
- Coordination of sea and air patrols
- Undertaking occasional night patrols and boardings

A number of other characteristics are of note. Local vessel agents are understood to be receiving licence fees from (foreign) operators but do transfer the fees to the Ministry for certain vessels. Korean vessels are noted for non-cooperation with authorities and never have a boarding ladder. Chinese shrimp vessels (40mm mesh) continue to use this mesh in areas where the target species are finfish. Lobsters have also been found on board Chinese trawlers. Observers report that Guinea Bissau flag vessels have very poor safety standards. Few/ no violations are recorded in port.

(iii) Sanctions and payment of fines

In general, the levels of sanctions and fines are adequate. Some of the sanctions are well designed, e.g., doubling of penalties for repeat offenders, specifying the fine as a multiple of the licence fees.

However some change in basic philosophy may be required. It is clear that there is a group of persistent offenders. A decision should be taken to eliminate these vessels and their operators from the fishery. Such a decision requires close cooperation with Guinea. A second possible change is the linking of sanctions to fishing effort, e.g., an automatic suspension of the fishing licence for periods from 10 days to 6 months.

‘Patrol’ sanction. As the AA has had considerable success in the use of suitable fishing vessels as patrol platforms, sanctions can include the use of the arrested vessel for fishery patrol. The confiscation of gear can include the confiscation of any equipment useful to the AA, such as radios, GPS, generators, liferafts, lifejackets, air conditioners, etc.

Payment of fines. The available documentation does not allow analysis of the payment of fines which total several hundred thousand US\$ per year. It is clear that there is considerable delay in payments and some fines may have been reduced as a result of pressure from the vessel operators. Other fines have been substituted by payments in kind, such as deliveries of rice for the civil servants, or discounted in lieu of repayment of debts owed by the government for investment projects. With regard to access fee payments, similar arrangements have been made particularly by the Chinese National Fishing Company (i.e., substitution of access fee payments by debt relief).

A number of confiscated vessels have been abandoned as the fines may have exceeded the value of the vessel, or the capacity of the owner/ operator to pay the fine. Requiring certain licensed vessels to deposit ‘good behaviour bonds’ may help to derive some financial compensation from vessel operators. In the case of ‘pirate’ vessels standing arrangements with ships brokers and marine sales agents could be established.

7.5. IMPROVING AND FINANCING MCS

Improvement of the basic economic state of Guinea Bissau is fundamental to improvements in the fisheries sector, which in turn can play an important role in economic recovery. Two strategies can be considered in parallel:

- Improving the returns from the access agreements by reducing effort, increasing fees, and improving MCS; and
- Bringing the economic benefits of the fishery ‘onshore’ as discussed above.

Both require improved fishery protection and control with emphasis on institutional development and finance, operation of patrol vessels (possibly making use of confiscated, or sanctioned vessels) and coastal radar, and human resource development, including timely payment of salaries and training.

7.5.1. Recurrent funding

The lack of recurrent funding is the primary constraint facing the AA. The AA has financial autonomy and its revenues derive from three main sources: the treasury (OGE), receipts from fines and confiscations, and participation in income from the access agreements. In addition FISCMAR operated an account for observer payments (Fundo de Gestão dos Recursos Halieutiques). The AA (FISCMAR) retains 30% of the revenue from sanctions. The remainder is divided: MPM 5%, Ministry of Interior 5%, Defence 5%, Justice 5%, and Ministry of Finance 50%. AA does not benefit from a share of licence fee revenues. FISCMAR accounts have not been effectively transferred to the AA and no general budgetary (OGE) allocation was made in the national budget. In principle the AA has a substantial income from fines and related receipts, but because of the general shortage of funds within the treasury, these funds have not been released (although the AA has been assured that they are not 'lost'). As a result, AA staff have not been paid for several months and the AA has resorted to 'borrowing' from the separate observer account to function. Consequently the observers have not been paid for some time.

In addition to salaries, the main expenditure items are: fuel, supplies for vessels, maintenance of vessels, generator fuel, communications, computer and photocopy supplies.

Revenue from sanctions cannot provide a stable financial basis for MCS activities. Some consideration can be given to the use of a proportion of the licence fee revenues. The following two tables provide an overview of the licence fees by regime and fishery.

Table 45. Comparison of 12 -month licence fees for 2002 by access regime (in US\$)

12 month licences/ per GRT or vessel	EU	China	Federpesca*	Chartered	National
shrimp/ GRT	272	400	330	204	134
cephalopod/ GRT	218	325	295	183	113
demersal fish/ GRT	198	300		85	63
tuna seiner/ vessel	2025			5634	3,521
tuna longline/ vessel	563			2817	2,113
pole and line/ vessel	338			2817	2,113
demersal longline/ vessel					2,113
small pelagics trawl/ GRT					28
small pelagics seine/ GRT					21
Bunker/ GRT				7	
Reefer/ GRT				10	
Materials and support/ GRT				20	
Motherships, canoe support/ GRT				20	

Sources: EU agreement, Chinese agreement, Despacho Conjunto 2/2001 MPM/ Min. Economia e Financas. Fee rates converted at US\$ = €0.9, 710 FCFA. *Plus US\$1,200 per vessel per trimester + local landings of fish.

Table 46. Range of estimated total access fees paid by vessel operators in 2001 (US\$/month/GRT)

Access regime	National companies	Chartered	EU	RGB/China	RGB/TK Motor	Kim Anavipesca
Shrimp trawl	5	7	24	35		132
Cephalopod trawl	3	6	20	32	58	
Demersal finfish trawl	3	5				115
Pelagic trawl		3				
Tuna seiner		2	0.35			
Crab	5					
Longliner	5	8				

Source MPM. Excludes access fees paid directly by EC. Note that fees for 2002 have been substantially increased.

7.5.2. Proposed BAD project

In February, 2001 FISCMAR prepared an MCS investment project for the ADB setting out some of the priority investments. The total estimated value was US\$2 million was broken down as follows:

Table 47. Budget for proposed ADB project (2001)

Vessel repair	261,860	Safety at sea	53,910
Mindelo	2,500	Life jackets (250)	10,637
Other	2,500	Other materials	43,273
Cacine/ Cacheu	148,837	Office equipment	80,971
Caio	93,023	Furniture	18,912
7 Junho	15,000	Computers	36,165
New vessels/ radios	213,550	Printers	6,381
RIBs (3 regions)	150,000	UPS	6,750
SSB (8)	44,800	Photocopiers	12,763
Portable radios (15)	18,750	Coastal stations (3)	600,000
Training	49,130	FISCMAR headquarters	819,579
At sea	40,000	Total	2,079,000
Personnel	6,665		
Legal training	2,465		

While the proposal is essentially modest and reasonable, some of the costs need to be revised and additional technical details are necessary. The document makes no analysis of the recurrent costs to be incurred and how the funding of the recurrent costs will be assured. This project is on hold because of the precarious state of public finances and is unlikely to be considered a priority project.

7.5.3. Increasing the economic benefits

The ‘control’ dimension of MCS plays an important role in securing economic benefits from the fisheries, which in turn provide additional revenue for MCS activities. At present the fishery economy is largely ‘offshore’, controls are weak and the economic benefits limited. Some approaches to increasing the economic benefits are given in section 4.2.1.



8. GUINEA

Guinea has had the benefit of two comprehensive MCS studies⁷⁷ and reference should be made to these studies for further details of the MCS situation in Guinea. The material presented in these studies is not repeated here except where it is necessary to illustrate particular issues.

8.1. STATE OF THE FISHERIES

8.1.1. Economic indicators

Guinea is less dependent on its fisheries sector than some of the other countries in the sub-region, as bauxite mining and agriculture dominate the economy.

Table 48. Selected economic and fisheries indicators for Guinea (various years)

Economic and geographical indicators		Fishery indicators	
GDP (billion US\$) 2000	3	Estimated resource potential	
GDP growth rate 2000	2%	- demersal finfish	35-40,000
Fisheries sector % GDP	1.3%	- crustacea	2-4,000
Sector contribution to gov. rev %	2.5%	- cephalopods	5-12,000
Fish consumption (kg/capita)	13	- large pelagics	5,000
Industrial processing plants	11 major	- small pelagics	50-200,000
Population (1000)	7,405	No. industrial vessels (2001)	221
Population growth rate	2%	- industrial Guinea flag (2001)	21
Per capita income (US\$/yr)	450	- industrial non-Guinea flag	200
Sector employment	30,000	Estimated total catch/ landings (2001)	80-95000
No. of fishermen	9,097	- artisanal catch/landings	48,500
- artisanal	7,690	- industrial catches (including bycatch)	53,962
% of population employed	0.4%	- industrial landings (includes some 'imports')	27,685
EEZ (km ²)	71,000	- small pelagics catches	55,000
Continental shelf 200m (km ²)	56,000	- demersal finfish industrial catch (2001)	32,408
Coastline (km)	300		

Sources: WB, CNSP, various years

8.1.2. Fishery resources

The biological potential of the fisheries estimated on the basis of 1998 data is cited at between 92,000 and 256,000, the range accounted for primarily by the fluctuation in stocks (or stock estimates) of small pelagics. Of the 35-40,000 tonnes of demersal fish, 20,000 tonnes is considered exploitable by the industrial fleet. Resources are considered to be fully, or overexploited⁷⁸ since 1997.

The models used are simple production models and the target level of catch (TAC) is equivalent to the MSY. Month-by-month catch and effort data is apparently neither available, or used for short-lived species groups (shrimp and cephalopods). The following table shows the transformation of the TAC into a GRT quota by fishery.

⁷⁷ Roche Cegir, 1999. *Faisabilite de la mise en place d'un service de gestion des unities de surveillance au sein du CNSP*; and SOMALCOR, 2001. *Etude de la societe SMALCOR pour la mise en ouvre du controle et surveillance de la peche dans la ZEE de la Republique de Guinee*.

⁷⁸ Unlicensed vessels are considered to have additional catches estimated at 30% of recorded catches. The basis for this estimate is not clear. See: Plan du Peche, 2000.

Table 49. Resource potential (tonnes), status, and proposed management action, 2002

Resource	Estimated potential	Status	Plan de Peche 2000 recommendation
demersal finfish	35-40,000 (industrial 20,000)	overexploited	Reduce catch by 10%
crustacea	2-4,000	Fully exploited	5-10% reduction in effort
cephalopods	5-12,000	ovrexploitation	Reduce catch by 40%
large pelagics	unknown		
coastal pelagics	50-200,000	underexploited	Increase in artisanal and industrial catches

Source: Plan de Peche, 2002.

Table 50. Derivation of the GRT quota for 2002

	demersal finfish	shrimp	cephalopods	small pelagics
TAC 2002 (including bycatch)	17,915	3,865	10,830	no TAC
CPUE 2000 (tonnes/day)*	3	1	2	27
Average number of vessels	24	20	23	13
Average GRT	307	196	248	2,000
Quota of GRT available, 2002	7,366	3,920	5,704	26,000

Source: Plan de Peche, 2002. *Used as 2001 CPUE not available at the time of preparation.

8.2. FISHING ACTIVITIES

The following table summarises the fishing activities. Effort information is not available.

Table 51. Number of vessels licensed and reported catch and production in the main fisheries, 2001

Fishery	Number of vessels licensed	Catch	Production	Discards	Discards %
cephalopod	53	18,172	13,720	4,453	25%
shrimp	36	5,702	3,824	1,878	33%
demersal finfish	68	34,334	25,035	9,298	27%
small pelagic	3	14,148	13,334	814	6%
Total		72,357	55,913		

Source: Recueil de statistique, 2001. Differences between tables reflect the differences in the dates of table preparation. Production means retained catch.

The issue of short, two-month licences complicates quota management and in 2001 the total GRT of vessels licensed for demersal finfish exceeded the quota by almost 170%. It may be necessary to express the quota in GRT/months and possibly to allocate the quota throughout the year, or adjust the system to more accurately reflect fishing effort.

8.3. MCS INSTITUTIONS

The Centre National de Surveillance et de Protection des Peches (CNSP) is responsible for fisheries MCS. The CNSP is a public institution⁷⁹ under the Ministry of Fisheries and Aquaculture (MFA) and has financial and managerial autonomy. The three divisions: Inspection (operations), Resource Management, and Administration employ 66 public servants, 40 contractual workers, and 162 observers. All personnel are paid in Conakry which necessitates their return to collect salaries.

The CNSP plays no active role in artisanal fisheries MCS which is addressed by the Artisanal Fisheries Directorate of the Ministry. CNSP does not have a specific SAR task. The Directorate maintains a register of artisanal fishermen, while the Merchant Marine section of the Transport Ministry maintains the register of pirogues. Lacunae in competence and capabilities with regard to MCS in the coastal zone will need to be addressed, e.g., culling of mangroves (Eaux et Forêts), and removal of beach sand.

⁷⁹ See: Decret D/95/303 du 31/10/1995.

Training of staff at all levels is a recognised⁸⁰ necessity. A comprehensive three year programme focusing on: (i) sea inspection; (ii) land-based coordination and operational control (iii) management and operation of an offshore patrol vessel; and (iv) communications has been proposed by SOMALCOR. Reinforcement and backstopping of the information systems installed through Canadian assistance will also be required.

8.3.1. Coordination

The CNSP has a close working relationship with the ministry and the Etats Major de l'Armée de Mer (EMAM). Joint efforts have been made on port inspections, control of artisanal fisheries, and statistical information. CNSP appears to have taken on a major administrative role in the preparation of fishing licences on behalf of the Ministry. The precise division of functions may require some reflection, as it is generally desirable for a largely autonomous 'policing' authority to be quite separate from the licensing authority. In September, 2001 a protocol was concluded with the ENAM on cooperation in fisheries protection.

Even prior to the Lanyi 7 exercise there has been direct contact at ministerial level between Guinea and Sierra Leone on MCS matters⁸¹. The Lanyi 7 exercise has substantially reinforced the commitment to undertake joint surveillance exercises. This commitment needs to be backed by improved communications, exchange of information on vessel licensing, enforcement of vessel markings, and improved offshore patrol capability.

8.3.2. MCS assets

The CNSP headquarters is secure and reasonably well equipped with office, storage space and vehicles. Radio, computer, telephone and photocopy equipment is modern and functioning. Recent acquisitions include 2 4x4 vehicles, 2 x RIBs (zodiacs), civil works at Bongolon base, and boots and uniforms. Senior staff have internet access. A number of databases⁸² and accompanying software (mostly in Access) have been specifically designed for CNSP under Canadian assistance. CNSP possesses a substantial library with over 700 publications and has established a project to computerise its library. The research institute (CNSHB) already has a library with a computerised catalogue.

The six coastal stations⁸³ have a staff of 8-10 persons each. All stations have operational VHF radios, in principle manned 24 hours. Not all stations are the property of CNSP. Kamsar is the most important of the stations and is housed in a secure compound. There are plans to link the station to the mains electricity⁸⁴ grid and to build housing for the staff as current arrangements do not permit officers to be accompanied by their families. As a result of discussions in the course of the mission the CNSP may be able to access the powerful Kamsar port authority radar. Among the problems cited by Kamsar staff are: lack of funds for construction of housing, various types of training, e.g., maintenance of Yamaha outboards, spare parts shortages, GRP repair, the need for a CNSP workshop to repair motors and radios.

8.3.3. Patrol vessels

Most of the successful surveillance patrols have been carried out by the 5 CNSP vessels, the largest of which is the 12.6m Matakang.

⁸⁰ See Roche Cegir, 1999. Section 6.4 Ressources humaines.

⁸¹ Including piracy and disputed arrests of Sierra Leone vessels by the Guinea navy.

⁸² The SOMALCOR proposals regarding information handling and database management are not supported.

⁸³ Kamsar, Koba, Koudoudé, Bongolon, Tamara, Matakang. For detailed descriptions of the stations see: Roche Cegir, 1999. Rapport Sectoriel No. 42.

⁸⁴ See chapter on Mauritania for an itemised solar powered coastal MCS radar station.

Table 52. Characteristics of the CNSP patrol vessels

Vessel	Matakang	Wassou / Touba	Tiro / Kassa
Base	Kamsar	Tamara /Bongolon	Kalaya / Brig. mobile
Length (LOA m)	12.65	6	5
Beam (m)	3.65	2.4	1.5
Hull	Steel	GRP	
Engines	Caterpillar 165 cv	2 x Mariner 75	1 x Yamaha 40
Speed (kn)	8	35	17
Crew	Up to 12	6	6
Fuel capacity (lit)	1200		120
Water (lit)	600		
Range/ autonomy	50 nm/ 2 days	15 nm	12 nm, 10 hours
Equipment	Radar, VHF, HF, GPS	GPS, compass, binoculars	

Matakang has a Furuno GP80 GPS, Furuno 1932 24v radar and FCV612 echo sounder, and is equipped with a Sailor VHF RT2048 25 w and Furuno SSB FS1550 150w radios. Zodiacs 'Loule' (towed by Matakang, Kamsar) and Koyin (based at Koba) are both 6m LOA x 2m beam, equipped with 2 x 70 hp Yamaha. Top speed is 35 kn with a crew of 6 and a 15 nm radius of action. They are equipped with Walkie-talkie, GPS, compass and binoculars. No patrol aircraft are available.

Naval vessels.

Two naval vessels are used for fisheries surveillance: P328 "Intrepide" and P300. The navy possesses other vessels which are apparently not used for fisheries protection.

Table 53. Characteristics of P328

Vessel	P328
Length (LOA m)	23.5
Beam (m)	6.1
Displacement	89.2 tonnes
Hull	1986
Engines	3 screw x GM 12V71 650 hp each

For details of vessel condition see: IMS, 2000. P328 Refit Scope of Work, Field Draft (SOCU document)

Purchase of a new offshore patrol vessel has been proposed as a turnkey type project under AFD and ADB financing. The total estimated cost is 16-21 million FF.

Table 54. Summary specifications of proposed offshore patrol vessel

Length LOA m	24.5	Crew	10-12
Beam m	6	Autonomy	900 nm at 12 kns
Hull	Steel or Aluminium	Water	800 lit minimum
Engines	2 x 700-900 cv	Fuel	20,000 lit
Propulsion	Twin shaft fixed pitch propeller	Zodiac	1 w/ hydraulic winch
Speed / 1 motor	16.5-18 kn / 5 kn	Annual operating cost	0.8-1.3 million FF

See SOMALCOR report for full specifications.

8.4. FISHERY PROTECTION

8.4.1. Measures

One of the principal management measures is the GRT quota system. In 2001 the shrimp and cephalopod quota was under-subscribed, while the demersal finfish quota was massively oversubscribed, indicating some difficulties with the system as indicated in the following table.

Table 55. Use of 2001 GRT quotas

	cephalopods	Shrimp	demersal finfish	small pelagics	total
GRT quota, 2001	10,500	3,900	3,500	26,000	
GRT licensed, 2001	5,709	1,882	9,361	3,355	
Utilisation of quota (+/-)	-4,791	-2,018	5,861	-22,645	
% quota utilisation	54%	48%	267%	13%	
Vessels licensed by fishery	55	42	81	4	182
Vessels with observer catch reports	53	27	62	3	145
TAC basis for GRT quota	9,500	4,600	10,500		
Reported catches by target species	5,538	1,223	26,659	7,901	39,169
Reported catch (incl. discards/ other)					53,962

Source: Rapport d'activites 2001 du CNSP. Some observer reports not analysed.

While the catch figures will bear some correction when all the observer reports are included, the table illustrates a number of problems and issues: (i) the control of GRT in the demersal finfish fishery was particularly deficient; (ii) either the actual catch bears little relation to the projections, or the perceptions of the fishing industry (no. of vessels purchasing licenses) are substantially different from the fisheries administrators (projected GRT), or the catch records are very incomplete. The latter is unlikely to be the case as the demersal finfish is 'overquota' and payments by vessels do not bear a direct relationship to recorded catches. (iii) GRT does not appear to give an accurate indication of potential effort. This issue has been examined in detail above (section 3.1). (iv) Consideration could be given to substituting the CPUE indicators in Table 50 with catch per adjusted measure of GRT, or per meter of vessel, per day.

A comprehensive range of conventional measures⁸⁵ are in place, including the use of observers on almost all vessels, closed inshore zone for the protection of artisanal fisheries. Transshipment is made either in Conakry port, or at anchor in the Conakry roads. As observers have no enforcement powers, the permitted 10% discards rate is not enforced. Similarly, the bycatch regulations are difficult to enforce and appear to bear little relation to the historical landings pattern.

Table 56. Bycatch in the shrimp fishery, 2001 (tonnes)

Catch retained on board	tonnes	%	Authorised by-catch for 2002* (%)
Shrimp	810	27%	
Cephalopods	227	8%	15%
Others	778	26%	?
Fish	1153	39%	12.5%
Total retained on board	2978		

* 2001 authorised bycatch levels not available.

8.4.2. Operations

Technical inspections (quayside) of 188 licensed vessels took place during 2001. Sea patrols are recorded in the following table. Collusion by the fishing vessels hinders additional arrests. Vessels such as the Matakang are too slow, are detected by fishing vessel radar, and cannot remain at sea for extended periods. The smaller units have difficulty operating at night when many of the zone incursions take place.

Vessels sea-days are approximately 16% of total days per year. Detailed report forms have been established for a range of inspections: technical check on vessel; transshipment; landings; port inspection; at sea inspection; observer report. Several of the software packages are used to place these reports in databases.

⁸⁵ See: Code de la peche maritime (Loi L95 du 12 Juin 1995) and implementing decrees and arretes.

Table 57. Operations of the CNSP coastal stations 2000 and 2001.

Year	2001		2000	
CNSP Base	no days at sea	vessels inspected	no days at sea	vessels inspected
Tamara	76	108	79	75
Kamsar	113	313	112	161
Koba	56	106	46	66
Koudoudé	27	28	31	19
Bongolon	59	101	39	21
Matakang	13	28	51	50
Total	344	684	358	392
Inspections per sea day	2		1.1	
Arrests made	14		10	

8.4.3. Infractions and sanctions

Reported violations are examined at a technical level by the CNSP and passed to the ‘Arrests Commission’ (Commission d’arraisonnement) presided over by the representative of the Minister for Fisheries and including representatives of: Transport (Marine Navigation Directorate, vice chairman), Finance, and EMAM. The national director of marine fisheries and the Director General of the CNSP attend. The Minister’s legal adviser is the secretary. The Commission makes the appropriate recommendations, which are generally approved by Ministerial decision⁸⁶.

(i) Infractions

Of the 14 arrests made in 2001, only one involved actions by the Guinea navy. None arose from aerial surveillance despite the fact that of the 44 vessels observed during the 2 flights, 22 were in violation. Seven of the arrests made were for multiple violations (fishing in prohibited zone, non-detention of licence on board, no observer) and received warnings. Six vessels paid fines totalling FG138 million (US\$86,000⁸⁷).

Table 58. Breakdown of violations (up to 3 violations per vessel) resulting in arrests, 2001

Unauthorised fishing (generic)	12
No observer	10
Zone	9
Mesh	4
No flag	1
Total number of arrests	14

Table 59. Violations detected and reported by observers, 2001

Total vessels observed	92	100%
Number / % with mesh violation	85	92%
Number / % with zone violation	34	37%

From a comparison of the level of violations recorded by observers, the number of arrests made, and the fines paid, the deterrent effect of MCS appears negligible. Many observer reports are of ‘medium’ quality, indicating that substantial additional observer training is required. Over 200 violations were reported via radio by observers. Offshore sales of fuel to Guinea vessels was also cited as common.

⁸⁶ Code de la pêche, Art. 56 (a).

⁸⁷ Conversion rate of 1 US\$ = FG1600.

(ii) Sanctions

The 1995 fisheries law remains valid, but the section on sanctions is under revision. Gear may be confiscated, but not the vessel. Licences may be suspended and the vessel can be detained in port (Art. 69). Penalties were considered unrealistically high and therefore non-applicable, and tended to undermine dissuasion. A proposal to revise the sanctions has been prepared partly based on discussions held during the SOMALCO mission. There are 7 proposed levels summarised as follows:

Table 60. Selected sanctions from the proposed new schedule in US\$ (projet de decret)

Sanctions	old**	New proposal		
		Maximum	minimum	confiscation
Pirate fishing (unlicensed)	200-750,000	126,904	30,457	gear and catch
Pirate fishing repeat (within 2 years)		double	double	vessel
Serious violations (incl. mesh and zone)*	57-225,000	30,457	15,228	gear and catch
5 other groups/ levels of offences		15,228	254	

* also licence suspension 6-12 months. ** Decret D/97/17 of 19/02/1997.

The old (existing) system is based on fines being a multiple of licence fees. This discriminates in favour of Guinea flag vessels and in favour of tuna vessels (with respect to a similar offence). However the levels of fines are not necessarily unrealistic compared to those successfully imposed in Guinea Bissau and some caution should be exercised in reducing the sanctions, as the inability to enforce the sanctions may not necessarily be due to their apparent high value. The use of the license suspension is strongly recommended and should be applied by tying up the vessel in port. Vessel confiscation can also be considered for first offence 'pirate fishing' when the offence is clearly deliberate and not due to administrative error.

8.5. IMPROVING MCS

It is stressed that MCS is a component of the management regime and reference can be made to the discussion in section 1.4, as the MCS system cannot be improved in isolation.

The Lanyi 7 operation indicated a number of weaknesses in the MCS command and control structures in Guinea and the difficulties in coordinating CNSP and ENAM activities. These are well recognised and the subject of internal discussion. In the absence of effective use of navy vessels for fisheries protection, the CNSP has proposed the acquisition of its own offshore patrol vessel.

8.5.1. SOMALCO recommendations

The SOMALCO report makes a number of extremely useful recommendations for improvement of MCS, in particular through upgrading the effectiveness of the CNSP. These include:

- Charter of a patrol vessel as an interim measure, and the acquisition of an offshore patrol vessel;
- Upgrading and acquisition of materials for the coastal stations;
- Upgrading and minor reorganisation of the CNSP;
- A comprehensive proposal for technical training, in particular for effective operation of the offshore patrol vessel (OPV);
- Increase in patrol days for existing vessels and use of the zodiacs in combination with Matakang;
- Obligation to report entry to closed areas;
- Need for a technical regulation on chafers⁸⁸ (dispositifs) and bycatch exclusion;

⁸⁸ See NAFO, op. cit.

- Charts and baselines (although it should be noted that the baseline definitions are not necessary for definition of closed areas);
- A range of administrative sanctions including those which do not require arrest (e.g., failure to make daily radio call). Additional US-type sanctions can also be considered, such as a 'fit-it' notice, e.g., if a vessel has a faulty boarding ladder, or its identification is painted unclearly, the vessel can be given a certain period to repair (fix) it. If on subsequent inspection the violation is not 'fixed' then additional penalties can be imposed.
- Ensuring that vessel operators and captains have a clearer knowledge of the fisheries regulations.

The apparent ignorance of (mainly foreign) vessel captains concerning the fishery regulations is a problem throughout the sub-region. It is suggested that as a condition of licensing captains be obliged to attend a short course on the fisheries regulations (1 day) and behaviour expected of a captain. The course can include practical drills, such as conflict with an observer, boarding and inspection of the vessel, or completing declarations. Vessel operators can be obliged to provide translations of basic documents and instructions (e.g., into Chinese, Korean, or other 'difficult' languages). Examinations (even acting through a translator) can be held if necessary.

8.5.2. **Financing MCS**

MCS costs are financed through: (i) direct treasury allocations; (ii) special surveillance and observer levies; and (iii) a share of the revenue from fines. The payments are made directly to the accounts operated by the CNSP. Vessels pay an annual surveillance contribution of between US\$1,800-7,500 and a monthly observer fee of US\$290-385. A new decree will divide the fines as follows: treasury, 50%; CNSP, 35%; Etats major, 15%; and arresting officer/ vessel, 5%. To develop a more stable financial foundation for MCS it is suggested that the CNSP should also have a share of the licence fees. The references made to 'improving the economic returns to fisheries' (section 4.2.1) are also applicable to Guinea.

Licence fees. Fees are based on the relative value of the catch, or target species and the statute of vessel. In comparison to the other types of vessels, fees for the 'ramasseurs' (US\$250/GRT) are considered too low considering the daily catch rates⁸⁹ of 3-5 tonnes per day of prime fish. The system of 'compensation' (temps de pêche perdu) and reimbursement of licence fees does not appear to be justified and should be abolished thus resolving the administrative difficulties involved. While Guinea licence fee levels are relatively high they are not necessarily the highest in the region for some fisheries (see comparative tables in section 4.3).

Table 61. Fisheries revenues in 2001 (excluding EU access fees)

	100 million FG	US\$
Licence fees	11	5,583,756
Surveillance contributions	1.65	837,563
Observer contributions	0.845	428,934
Total	13.495	6,850,254

Conversion rate applied : 1US\$ = FG 1970

Revenue from fines. The relatively low revenue from fines is of considerable concern (e.g., compared with Guinea Bissau) and allows considerable room for improvement. There are considerable differences in most countries between the fines levied and the payments made, and when compounded by the delays in the payments, annual revenues from fines are difficult to estimate.

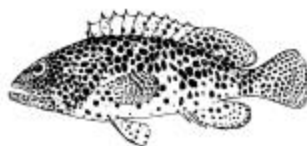
⁸⁹ From analysis of Senegalese observer reports.

The AFD/ ADB project proposal. The proposal is broadly supported. The exception are the proposals related to improving the information system as these appear unclear and lacking a clear vision⁹⁰. In addition to the investments proposed in the following table (for AFD funding), it is proposed that ADB provide an additional US\$ 0,7 million as a recurrent budget 'reserve'. Additional work is required to detail the recurrent costs and funding, in particular for the operation of the OPV in the longer-term. At a political and policy level the respective roles of the CNSP and the EMAM may require further definition. As the OPV is a major capital item, its multipurpose functionality (SAR, pollution control, customs and immigration) may need further clarification, or clear lines of communication and coordination established. Investment costs of the proposed project are as follows:

Table 62. AFD/ ADB project proposal (US\$)

1. Patrol vessel	2,642,857
- Purchase of vessel	2,285,714
- Technical assistance during construction	35,714
- Delivery	100,000
- T/A and training after delivery	221,429
2. Inspection and control materials	128,571
- Communications	22,857
- Inspector equipment	31,429
- Coastal station equipment	24,286
- Training materials	4,286
- Observer equipment	45,714
3. Information system	114,286
- upgrading of the Information Centre	25,714
- Information exchange equipment	60,000
- Training materials	10,000
- Software development	18,571
TOTAL	2,885,714

Source: SOMALCO report, Tome 2, 30/04/2001. Recurrent costs not included in the proposal with the exception of those estimated for the patrol vessel.



⁹⁰ See Oceanic Developpement, 2002. for an alternative approach as applied to Senegal.

9. MAURITANIA

The section of the report on Mauritania is **selective**. It is **not meant to provide a complete overview** of the MCS system. Rather than providing a comprehensive assessment of MCS in Mauritania, this report concentrates on an appreciation of a recent MCS study⁹¹ which has already undertaken a broad review of MCS in the country. Reference should be made to the above-mentioned study for further details.

Table 63. Selected indicators for Mauritania

Fisheries sector % GDP	5.2%	Estimated resource potential (1000 tonnes)	
Sector contribution to gov. revenue %	27%	- demersal finfish	90-168
Exports value (million US\$)	184	- cephalopods	42-88
Exports (1000 tonnes)	186	- bivalves large but unknown potential	?
Value of fish exports as % total exports	46-50%	- crustacea	37,442
Value of catch 1997 prices (billion US\$)	1.57	- large pelagics	10-26
Population (million, 2000)	2.7	- small pelagics	300-822
Population growth rate (2000)	2.7%	No. artisanal vessels (2001)	> 4,000
Per capita income (US\$/yr)	370	No. foreign artisanal vessels (1998)	350
Sector employment	30,422	No. industrial national flag vessels (2001)	184
No. of fishermen	20,092	No. industrial foreign flag vessels (2000)	217
- artisanal	10,000	Industrial catch (1000 tonnes) (1999)	587
- industrial/ semi-industrial	10,092	Artisanal catch (1000 tonnes) (1999)	15
% of population employed	1126.7%	Estimated tuna catches (tonnes)	2,515
EEZ (km ²)	213,840	Artisanal fishery as % of landed value (2001)	22%
Continental shelf 200m (km ²)	36,000	Artisanal % of production (2001)	10%
Coastline (km)	720	Artisanal % of national production (1999)	34%
National park km ² (PNBA)	160	Landings % catch	40%

Sources: WB, GFA, MPEM, other (some conflict between different sets of information)

9.1. STATE OF THE FISHERIES

Resource assessments are intermittent and research reports often lag behind. Consequently the current state of the stocks is not well known. The cephalopods are probably overexploited, though recruitment is heavily dependent on environmental conditions. Crustacea, demersal finfish, and large pelagics are considered fully exploited, or overexploited. Bivalves are underexploited and hake may be underexploited. The biomass of the small pelagics tends to vary with environmental conditions, and is considered underexploited. However, the interactions between the different small pelagic species and stocks is poorly understood.

9.2. FISHING ACTIVITIES

Of the industrial vessels operating during 2000, 141 were Mauritanian flag. Of the 50 different flags of the foreign fleet 43% were EU vessels. Most EU vessels land in Las Palmas. Reefers are authorised (virtually automatic) to operate at anchor at designated points close to Nouadhibou. Pelagic reefers may tranship on the high seas with special permission. In principle all transshipments are supervised by DSPCM inspectors. Bunkering at sea is allowed.

⁹¹ GFA, 2001. Une strategie a long terme pour optimiser le système général existant de surveillance de la peche en Mauritanie – Phase II. Vol 1 et 2.

Table 64. Licensed industrial vessels by fishery 1998-2000

	1998	1999	2000
Cephalopods	206	159	160
Shrimp	41	47	42
Hake	na*	40	43
Pelagic	na*	80	83
Tuna	37	65	73
Total	284	391	401

* not included in available database.

Total catches have remained relatively stable (in the order of 650,000 tonnes) of which approximately 86% constituted by small pelagics. By-catch in the shrimp fishery may be as high as 90%. A rapid expansion of the artisanal fishery has been a prominent feature of the sector in recent years. New regulations are likely to expand the zones reserved for artisanal fishing and possibly simplify the zoning in the north.

9.3. MCS INSTITUTIONS

The Ministère des Pêches et de l'Economie Maritime (MPEM) has overall responsibility for the fisheries sector. The dependent and autonomous Centre National de Recherches Oceanographiques (CNROP) monitors the state of the fish stocks and provides scientific advice.. In accordance with Art. 7 of the code de pêche (2000), a national consultative council (CCNADP), which includes private sector representatives, advises on policies and fishery management plans. However no fishery management plans have been established. The Parc National de Banc d'Arguin has specific responsibility for both maritime and terrestrial parts of this biosphere reserve. The 'Stratégie d'aménagement et de Développement du Secteur des Pêches et de l'Economie Maritime de 1998' provides policy guidance for the sector.

The Delegation de la Surveillance des Pêches et au Contrôle en Mer (DSPCM), based in Nouadhibou is responsible for fisheries protection. The DSPCM has 400 staff many of which about 220 are seconded navy personnel. Arrangements exist to prevent loss of seniority and benefits in the navy. The maritime police brigade has about 20 staff in the ports. The navy also cooperate in MCS. Protocols exist between the fisheries authorities and the Ministry of Defence (navy) and with the Gendarmerie Maritime. Under the protocol the DSPCM funds staff incentive payments, fuel and victuals for the navy.

9.4. FISHERY PROTECTION

9.4.1. Violations and sanctions

The dossiers are prepared by the DSPCM through a technical review and a weekly meeting of the 'arrests committee'. The dossier with appropriate recommendation is then transferred to the Ministry. In recent years almost all DSPCM recommendations have been accepted by the Minister, who makes the final decision. The patrol vessel captain (not the boarding officer) is responsible for preparation and signature of the arrest process (PV).

Table 65. Violations by type of violation (1996 -2000)

	1996	1997	1998	1999	2000	% (2000)
Administrative	204	315	527	359	266	59%
Catch	39	45	189	97	81	18%
Zone	42	66	116	72	61	14%
Gear	48	57	85	76	41	9%
No licence	1	1		4	2	0.4%

Source: DSPCM

Table 66. Breakdown of the number and frequency of violations (excluding administrative violations)

Code	Description of violation		Number 2000	Number 2001	Rank [#] 2001	Number 1988-2002	Rank [#] 1988-2002
31	Minimum size	Taille/poids non autorisé	40	58	1	247	5
13	Pirate	Navires Pirates	2	52*	2	111	11
15	Logbook	Défaut Journal de Pêche	58	39	3	682	2
2	Zone	Pêche dans Zone Interdite	95	37	4	853	1
10	Type of fishing	Genre de pêche n.autorisé	15	21	5	116	10
67	False declaration	Fausse déclarat. captures	19	19	6	166	8
66	Refusal to stop	Refus d'obtempérer	23	13	7	193	7
69	Mesh	Maill. non réglementaire	16	12	8	387	4
14	Licence expired	Licence expirée	13	8	9	125	9
61	Vessel identification	Défaut marquage du navire	8	8	10	527	3
20	Bycatch	Dépas.prisés accessoires	3	8	11	83	12
53	Illegal net	Filets prohibés	9	7	12	200	6
1	Entry / exit report	Déclaration entrée/sortie	5	4	13	28	15
55	Entry / exit report	Décl.entrée/sort.nav.étr.	1	3	14	11	17
56	Unauthorised landings	Débarquem. non autorisé		2	15	14	16
64	Statistics	Décl. données statistiqu.	1	2	16	7	20
33	Fleeing	Délit de fuite	2	1	17	37	14
51	Illegal gear	Engins prohibés	1			58	13
65	Transshipment	Transbordement illicite				11	18
99	Penal code	Délit(s) concer. Cd.Pénal				11	19
72	Trip time limit	Non respect Durée Marée				3	21
32	Gear stowage	Arrimage engins non auto.				1	22

[#] most frequent violation = 1. *the number of 'pirate vessels is exceptionally high in 2001 due to the inclusion of Senegalese pirogues. A number of other types of violations are also excluded in order to concentrate on those considered most threatening to the fish resources.

Sanctions. Recovery rates on fines, are high, in the order of 80% with past years higher (e.g., 1998 is 99%). A total of US\$ 713,000 in fines was levied during 2001, of which US\$ 282,000 (40%) had been paid at the end of the period. Some artisanal fishers are sanctioned, in particular foreign artisanal fishermen, or artisanal infringements in the Parc National de Banc D'Arguin (PNBA). Recent legislation will facilitate enforcement of regulations in the artisanal fisheries.

Table 67. Results of processes (PVs) of detected violations

Code	Result	1995	1996	1997	1998	1999	2000	2001	2002
CA	Fined	337	374	466	804	390	272	306	74
CE	Acquitted by Committee	1	3	36	126	115	178	93	9
CG	Acquitted by DSPCM	43	15	53	146	167	71	83	42
	Total records	383	416	613	1125	706	545	506	228

Notes: This table is purely indicative of how the information system may be used to determine the relative effectiveness of different steps in the PV process. The values in the table should not be interpreted as absolutes because of the manner in which the PV database entries are made.

9.4.2. MCS capabilities

The principal physical MCS assets are:

- 2 offshore patrol vessels in good condition;
- 2 aircraft in operating condition (property of the airforce);
- 3 coastal stations south of Nouakchott and 3 coastal radar stations south of Nouadhibou covering the Banc D'Arguin and the main cephalopod fishing grounds;

- 1 vedette PNBA;
- 2 vedettes at Noaudhibou, and a costal patrol vessel the 18 m Yacoub el Rajel fitted with 2 x 707 hp MAN diesels;
- 5 small open boats south of Nouakchott;
- 3 x 4WD vehicles at stations; and
- radio communications system.

The PNBA also operates several ‘vedettes’ and the customs operates a 14 m ‘vedette’ in Nouadhibou. Of particular interest are the aluminium pirogues used at the coastal stations. These are made locally and are particularly useful for surf beach launching and landing (see photo archive). Technical details of the additional physical requirements recommended for the MCS institutions are provided in the GFA report.

Several of the characteristics of the new 54 m Mauritanian patrol vessel (Arguin) make it an ideal vessel for the sub-region, perhaps in a smaller configuration for some countries. The key innovations are the lengthy autonomy (30 days) and low operating costs, giving a greater number of days at sea at a lower cost per day than the older vessel (Abba). Its top speed of 16 knots is adequate, while the two motors geared to a single drive shaft provides 11 knots using a single motor. The steel hulled 25 knot chase boat fitted with hydrojet is launched with safety from a ‘stern-trawler’ type ramp. The capital cost was €1.5 million and annual operating costs are estimated at €0.68 million per year excluding cost of crew and repairs.

Table 68. Principal characteristics of the Mauritanian offshore patrol vessels

Vessel	Abba (1994)	Arguin (2001)
Length (m)	54	54.5
Beam (width) (m)	10	10.6
Hull	Steel / Alum. superstructure	Steel
Displacement (tonnes)	295-334	1048
Engines power	2100 kw x 2	1020 kw x 2
Engine type	MTU 16V 396 TE94. Plus 2 x electric motors for slow speed	2 x MAK M20
Propulsion	Twin shaft	Single shaft
Speed (knots)	23.6 – 6	16 max.
Autonomy		30
Crew	37	32
Other	Problems with ramp door design. 1 x zodiac w/ 2 motors	Chase boat: steel hull, Yanmar inboard with hydrojet, 25 knots, 6 crew, radar, GPS, VHF
Photo available	-	Yes

Radio and radar. DSPCM headquarters is relatively well equipped with radio: HF Furuno 1562-25 250 watt (ARF/010), the AFR/010 radio telex has never worked; marine VHF Yaesu FTM 2002 with a 35 nm range used for port and local communications; Sailor HF fixed frequency (1994) with scrambler; Sailor VHF SSB 2100 1500 watt (not operational); VHF marine Sailor RT2048 (operational). All patrol vessels have radio equipment. Observers make daily position / catch reports. Personnel seconded from the navy operate a 24-hour radio watch. Communications between Nouadhibou and the southern coastal stations are poor because of the distances involved. There are also communications difficulties between the coastal stations and the aircraft. Principal requirements include training in repair and maintenance, stocks of spare parts and a GMDSS receiver.

Coastal stations. Of particular sub-regional interest are the specifications of the coastal radar installations in Mauritania. Radars operate at Cap Blanc, Timris and Tarfarit. The other coastal stations PK28, PK140, N'Diogo, Balawkh, and Nouakchott are not as yet equipped.

Table 69. Inventory of the Cap Blanc coastal radar station and estimated cost

Radar	Display BM2 type 65626/cak/a; Scanner 65423; Tuning unit 65425 class x
Radio	HF ICOM IC M710; VHF Maritime ICOM M59 EURO; VHF Air A200
Generator	Lister Petter LPA 3A 081 4 hp
Power supply UPS	Topclass 20/24 producing 2000w DC 21-32v DC, 225V AC 50 Hz 8 A; Regulator
Regulator	Solar charge controller SR30, system voltage 12/24, max. current 30A
Batteries	24V Fulmen Solar 2v 1850AH/100H, 12V Fulmen Solar 2v 750AH/100H
55 solar panels* each	Max. power 55W, Short circuit: 3.45A rated 3.15A, Open circuit: 600A, 21.7V rated 17.4, fire rated class C, 6A fuses.
Capital cost (1,000 \$)	Buildings 7, radar 12, generator 1.4, tower 7, solar power 13, radios 2.8. Total: 45 approx

*giving up to 9 days standby power for station including TV, fridge and lighting

Software and data management. A version of the primary ‘surveillance’ package is used by SOCU and throughout the sub-region. It handles surveillance and infraction information. The DSPCM is in possession of the source code and has the technical skills to debug the SOCU version and code the additional reports needed at the sub-regional level. A second database handles the management of fines. Accounts are maintained with SAARI 6.00 analytical accounting package. Databases for entry/ exit reports, a register of delinquent captains (being compiled in cooperation with the Merchant Marine), and catch declarations are in various stages of development.

Fleet management. The software package for fleet management / maintenance is far more advanced than any other in the sub-region. The system of spare part inventory control is linked to the vessel and equipment maintenance schedules and is operated by one officer. It is supported by a realistic budgeting, a readily accessible foreign exchange account, customs duty exemptions, fast-tracking procedures through customs, and prior arrangements with spare parts suppliers. This system is a vital ingredient for MCS success and ensures minimum downtime for vessels and equipment. Similar arrangements should be considered in other countries. However, even with this system partly operational at the time of the GFA study only 60% of the major MCS equipment was considered fully operational.

9.4.3. Activities

Reference should be made to the GFA report for a comprehensive description of MCS activities. The DSPCM control and inspection manual is obsolete. Port controls are acknowledged to require reinforcement. Compilation of catch information takes 2 to 3 months. A bilateral convention on fisheries cooperation exists with Senegal (February 2001, for 2 years).

Table 70. Aerial surveillance and arrests 2000 and 2001.

Year	Air hours	Number of vessels observed	Arrests
2000	418	2433	56
2001	364	2418	13

Coordination and finance. The DSPCM takes effective responsibility for coordination of all maritime patrols. As seconded military personnel have historically been the directors of the DSPCM, the military and DSPCM activities are closely aligned and harmonised.

Licensing is a joint activity of the Ministry and the DSPCM. As 3-month licences are issued to several hundred vessels, the bureaucratic procedures can be cumbersome. It is suggested that a means be found to issue yearly licences, possibly with quarterly payments.

The DSPCM budget for 2001 was Oug. 620 million and Oug. 716.6 (US\$ 2.6 million) in 2002. The accounting package allows a detailed breakdown of expenditures by cost centre and item. A similar system is required in other countries to track expenditures and budget accurately. In 2000 the vessel

operations accounted for approximately 66% of total expenditures (ABBA alone accounted for 23%), while fuel accounted for 45% and insurance 12% of total expenditures.

Future development of MCS. The GFA report contains a detailed investment proposal for joint German and DSPCM funding. The principal components, which are 86% financed through development assistance, are as follows:

Table 71. Components of the GFA investment project proposal (€1,000)

Management of MCS	112	2%
Coastal stations	2,035	41%
Port and sea inspection	82	2%
Aerial surveillance	814	17%
VMS	547	11%
Technical assistance	717	15%
Incremental recurrent costs	605	12%
Total excluding contingencies	4,912	100%

9.5. STRATEGIC ISSUES

9.5.1. Observations on the GFA report

The GFA report is a comprehensive document and provides a valuable contribution to the development of an effective MCS system. In general, the analyses are fully supported and the observations given below are intended to complement rather than detract from the study.

Targeting versus coverage. The methodology used to evaluate the proposed project/ MCS system components is based on the idea of coverage (“couverture moyenne pondérée” – Tableau K1). The idea is to identify the most cost-effective MCS component. However, it does not appear to be necessary to compare the components as they are complementary rather than competing. The analysis tends to assume that more geographical coverage and coverage of a greater percentage of the fleet means enhanced MCS. This ignores the fact that some types of coverage neither detect, nor dissuade certain violations, e.g., VMS cannot detect illegal mesh size. Coverage of oceanic areas is not necessarily as ‘valuable’ as coverage of the continental shelf, or the Banc d’Arguin. Essentially, coverage is not equivalent to effectiveness. Targeting of surveillance is likely to be more important than expanding coverage. The MCS must target the most common and serious violations, in particular those which impact directly on the resources (see Table 66). An alternative methodology, which gives quite different results, may be explored as outlined in the following table (see line: ‘relative enforceability value’).

Clearly additional factors must be included in the calculation, e.g., the relative frequency of the violations (line E), the enforcement success (arrests/ fines) per unit of MCS effort for each component, and the relative costs per unit of surveillance effort (conversion of lines C and D). Shortage of recurrent funds is among the principal constraints on the effective use of the existing investments. The relative recurrent costs of the different components (Table K.6) can also be included in the analysis. The entire exercise is complex involving several sets of matrices and numerous assumptions and simplifications.

Table 72. Possible methodology for comparison of relative values of MCS components (*indicative only*)

A. Enforceability of violations[#]		air	sea	port	radar	VMS
Zone		2	2	0	1	2
gear/ mesh		0	2	1	0	0
minimum size		0	2	2	0	0
Pirate		1	2	0	0	0
Violation	B. Perceived* relative 'value' of violation	Relative value of MCS component (= A * B)				
		air	sea	port	radar	VMS
Zone	2	4	4	0	2	4
gear/ mesh	2	0	4	2	0	0
minimum size	1	0	2	2	0	0
Pirate	3	3	6	0	0	0
Relative enforceability value		7	16	4	2	4
C. Investment cost US\$ million (Tableau K1)		5.8	19.7	na	1.1	0.5
D. Recurrent cost Oug. million		Calculate from adjusted Tableau K6				
E. Detection / sanction frequency (see text below)		Calc1	Calc2	Calc3	Calc4	Calc5

Notes: [#] the most frequent/ serious violations are selected; 0 = unenforceable, 1 = contributes to enforcement; 2 effective without assistance of other components.* the perceived 'value' of a violation can be derived from the relative values of fines/ sanctions for the different offences.

Table 72, Line E. Absolute and relative levels of violations . The analysis of detection of violations in the GFA report (Tableau 2.11) needs to be used in conjunction with the surveillance effort to give an indication of detection (and sanctions imposed) per unit of surveillance effort. An analysis of the radar reports (% of total echoes in closed areas) can provide⁹² a measure of the absolute level of zone violations in certain zones (Calc4). This is perhaps the only measure of total violations available, although an equivalent estimate can probably be derived from VMS results (Calc5). It is also particularly useful for establishing the night-time patterns of close area incursions. Calc1: A similar relative measure can be derived from the aerial surveillance results (violations % observations, see Table 70). Sea inspections need to be related to fishing effort, e.g., total boardings as % of total fishing days of the entire, or targeted fleet (Calc2).

Shore controls and observers. Shore controls are not included in the analysis, but are an extremely cost-effective component of MCS. Consideration can be given to placing inspectors in Las Palmas and possible in Dakar, given the quantities of Mauritanian fish landed in foreign ports.

Co-management. The fishery protection and control dimensions of a co-management regime(s) for the artisanal fishery is perhaps not given sufficient attention. In particular the establishment of an effective system of registration of pirogues and reinforcement of fishermen's organisations need support.

Links to fisheries management plans. While the report identifies the lack of management plans as a major constraint, the conclusions / components remain (perhaps of necessity) generic. MCS is simply a component of a fisheries management regime and the linkages between specific fisheries and their MCS components need to be more specific.

9.5.2. Methodologies for evaluation of MCS

The following boxes are included at the specific request of the DSPCM.

⁹² Information not currently compiled.

Box 8. Enforceability of management measures

Management Measure	Index*	Dockside	At-Sea	Airborne
Permits	8	Reasonable	Reasonable	Difficult
Bag/Possession Limits (Low Catch Volume)	8	Reasonable	Reasonable	Not Possible
Max/Min Fish Size	8	Reasonable	Reasonable	Not Possible
Prohibited Species	8	Reasonable	Reasonable	Impractical
Closed Seasons	7	Reasonable	Reasonable	Difficult
Days-At-Sea (DAS)	6	Reasonable	Reasonable	Difficult
Closed Area	6	Impractical	Reasonable	Reasonable
Bycatch Via Prohibiting Retention	6	Reasonable	Reasonable	Not Possible
ITQs/IFQs w/weighmasters	6	Reasonable	Impractical	Impractical
Vessel Monitoring System (VMS)	5	Reasonable	Difficult	Impractical
Bycatch Via Amount Landed	5	Difficult	Impractical	Not Possible
ITQs/IFQs	5	Difficult	Impractical	Impractical
Gear Restricted Areas	4	Impractical	Reasonable	Impractical
Bycatch Via Amount On Board	4	Difficult	Impractical	Not Possible
Trip Limits (High Catch Volume)	4	Reasonable	Impractical	Not Possible
Quotas	4	Difficult	Impractical	Impractical
Gear Limitations	4	Difficult	Difficult	Impractical
Bycatch Via Percent Landed	3	Difficult	Impractical	Not Possible
Limited Tow Times for Trawls	2	Not Possible	Impractical	Impractical

Source: Atlantic States Marine Fisheries Commission Law Enforcement Committee, 2000. Guidelines for resource managers on the enforceability of management measures. * Index based on a scale of 1-10 as judged by a group of senior resource managers.

Box 9. Selected references on the economics and evaluation of MCS

- Crane, Barry D. and Steve Warner, Melissa Hirsch Kuchma, 1999. *Fisheries Law Enforcement: Assessment of Deterrence*. Institute for Defense Analyses, Virginia, MD.
- Day, Douglas, 1995. Tending the Achilles' heel of NAFO: *Canada acts to protect the Nose and Tail of the Grand Banks*. Marine Policy Vol. 19, 4: 257-270. Great Britain.
- Furlong, W.J., 1991. *The Deterrent Effect of Regulatory Enforcement in the Fishery*. Land Economics Vol. 61, 1: 116-129.
- Furlong, William J., 1992. *Enforcement Effectiveness Study - Report One. Introduction and Review of Fishermen Survey*. Department of Fisheries and Oceans.
- Furlong, William J., 1992. *Enforcement Effectiveness Study - Report Two*. Department of Fisheries and Oceans.
- Furlong, William J., 1993. *Enforcement Effectiveness Study - Report Four. Summary and Synthesis*. Department of Fisheries and Oceans.
- Furlong, William J., 1993. *Enforcement Effectiveness Study - Report Three. Estimation of the Enforcement Model*. Department of Fisheries and Oceans.
- Furlong, William J., *Observer Deployment in the Fishery and Regulatory Self-Enforcement*. Dept. of Economics, University of Guelph, Ontario, Canada.
- Hønneland, Geir, 1999. *Compliance in the Barents Sea fisheries. How fishermen account for conformity with rules*. Marine Policy Vol. 24, 2000: 11-19.
- Kelleher, K., 2000. *Cost/ Benefit Comparison of Different Control Strategies: United States*. Prepared for the European Commission, DG Fisheries. Oceanic Developpement, January 2001.
- Kelleher, K., 2001. *Cost/ Benefit Comparison of Different Control Strategies: Norway*. Prepared for the European Commission, DG Fisheries. Oceanic Developpement, January 2001.
- Kelleher, K., 2001. *The costs of fisheries monitoring, control and surveillance in developing countries*. Draft for FAO Circular. FAO, Rome.
- MRAG Ltd., 1993. *Control of foreign fishing. Research report. Decision modelling and the optimisation of benefits to coastal state developing countries from the control of foreign fisheries*. MRAG for ODA Fish Management Science Programme.
- Sutinen, J.G. and K. Kuperan, 1994. *A Socioeconomic Theory of Regulatory Compliance in Fisheries*. Proceedings of the VIIth Conference of the International Institute of Fisheries Economics and Trade, 18-21 July, Taipei, Taiwan.
- Sutinen, Jon G. and Peder Andersen, 1985. *The Economics of Fisheries Law Enforcement*. Land Economics Vol. 61, 4: 387-397.

10. SENEGAL

A comprehensive report⁹³ is in press on state of MCS in Senegal and proposed future priorities. The details provided in the report are not repeated here and reference should be made to this report for further detailed information. This section concentrates on selected issues:

- MCS institutional structures
- Financing of MCS
- Implementation of sanctions
- Safety at sea
- Regional cooperation

10.1. ECONOMIC IMPORTANCE AND STATE OF THE FISHERIES

The economic importance of the fishery sector in Senegal is well documented. Landings of approximately 400,000 tonnes in 2001 generated export of about 185,000 million FCFA (38% of total export revenues). The sector provides direct and indirect employment for approximately 600,000 people.

Total biological potential is estimated to be in the order of 450,000 tonnes/ year. Almost all fish stocks are under high fishing pressure. The demersal resources have experienced significant changes in catch composition, reduction in the average size and yield of some high value species. Lobster, shrimp, and prime demersal finfish are considered overexploited. The fishery for small pelagics, the basis for the artisanal fishery, is subject to pressure from industrial fisheries in Mauritania, and to changing environmental conditions. Catches of the important small pelagics have remained relatively stable. Resource assessments are intermittent and form part of the basis for the important zone management regime. The industrial fisheries target the demersal resources in direct competition with artisanal fishermen.

This declines in catch rates and in the value of the catch have reduced the profitability of Senegal's fisheries in recent years, placing additional economic pressures on vessel operators to violate the fishery regulations and increasing the potential for conflicts between fishermen. The economic consequences of the growing scarcity of resources is evident in the closure of fish processing plants and fishing companies, unemployment in the port of Dakar, the age profile of the fishing fleet, and concern over loss of life at sea where pirogues travel ever farther in search of fish, often in poor weather and unable to afford safety equipment.

There are several reasons for the decline in resources, and their value, including: (i) changing environmental conditions; (ii) the uncontrolled expansion of the artisanal fleet; (iii) changing market conditions, notably an increase in fuel costs combined with a decline in European market prices and an expansion in demand for smaller-sized demersal fish in African urban markets; and (iv) absence of effective fishery management plans ; and (v) weak MCS.

⁹³ Oceanic Développement, 2002. *Etude de faisabilité sur la surveillance des pêches au Sénégal*. Ministère de la Pêche, DPSP, Agence française de Développement. Concarneau, mars 2002 (version préliminaire).

10.2. MCS INSTITUTIONS

The Ministère de la Pêche (MP) holds overall responsibility for MCS. The Direction de la Protection et de la Surveillance des Pêches (DPSP) has specific responsibility for fisheries protection and MCS. Direction de l'Océanographie et des Pêches Maritimes (DOPM) is the fisheries administrative directorate and is responsible for industrial vessel licensing (artisanal vessels are not licensed). DOPM staff are present and in many of the artisanal landing sites and provincial administrative centres. A separate directorate is responsible for inland fisheries and aquaculture.

The Centre National de Recherche Océanographique de Dakar-Thiaroye provides scientific advice on the fisheries. CNROP undertakes biological monitoring and compiles and analyses vessel logsheets. The industry organisations⁹⁴ are well established and more powerful than in any other SRFC country. They play an important role⁹⁵ in fisheries management and few initiatives take place without their involvement. Based on the results of current consultations⁹⁶, up to 34 Local Fisheries Committees (Conseils Locaux de Pêche, or CLs) may be established with an advisory role on artisanal fisheries. Local fisheries regulations may be established based on the advice of the CLs. Both the Navy and the Air force form part of the Ministry of the Armed Forces. The secondment of additional navy personnel to man coastal stations and the radio watch under a protocol of cooperation is a welcome development.

DPSP. The DPSP was created to give a firm institutional basis to an MCS project (the PSPS) which operated for 20 years. However, the DPSP did not inherit the financial means, the autonomy, or the staff structure of the PSPS and has encountered serious difficulties with finance and staffing. Two main institutional options are under consideration: (i) to continue as a directorate of the Ministry but with financial autonomy; or (ii) to establish an autonomous agency responsible for fisheries protection / MCS. While the establishment of a special account provides the much-needed financial autonomy to a directorate, it is not generally favoured under government (and IMF) policy. The creation of an autonomous agency not only removes cumbersome financial and administrative constraints and facilitates personnel management, but may give access to other forms of donor funding. The relationships at field level between any MCS agency which is established and DOPM must be very carefully considered to avoid duplication of effort, avoid differential salary scales, and assure an integrated approach to artisanal fisheries administration at local level. In the future, the most difficult MCS problems and issues are likely to arise in the control of the artisanal fisheries. Consequently the structure and functioning of the entire fisheries administration at the local level is of critical importance.

10.3. FISHING ACTIVITIES

Unlike the other countries in the sub-region, the artisanal fisheries are considerably more important than the industrial fisheries, both in terms of landings, value added, raw material for exports and processing, and for local food supply. There are almost 11,000 pirogues (marine and riverine) operated by over 52,000 fishermen. Major investments are being made in landing sites and infrastructure.

⁹⁴ Collectif National des Pêcheurs Sénégalais (CNPS) ; Fédération Nationale des Groupements d'Intérêt Economique de Pêcheurs (FENAGIE-PECHE); Fédération Nationale des Groupements d'Intérêt Economique de Mareyeurs du Sénégal (FENAMS), Union Nationale des GIE de Mareyeurs du Sénégal (UNAGIEMS) Groupements des Armateurs et des Industriels de la Pêche au Sénégal (GAIPES)

⁹⁵ See : Winter, M. et A.S. Diop, 2001. Décentralisation e gestion des ressources naturelles. Le cas de la gestion locale de la peche a Kayar. USAID, Senegal. E.g., a Kayar 50-400 pirogues étrangers selon la saison en comparaison que 200-300 pirogues autochtones.

F. Gaspart et J.P. Platteau, 2001. Action collective pour le contrôle de l'effort de pêche au niveau local : Evaluation d'expériences récentes réalisées dans les pêches artisanales sénégalaises.

⁹⁶ DOPM, 2001. Rapport provisoire de groupe de travail sur les conseil locaux des pêches maritimes.

Foreign fishing is significantly less important than in many other countries in the sub-region. Of 164 industrial vessels licensed in early 2002, 154 were Senegalese. Fishery protection and management efforts are therefore concentrated on the artisanal fisheries and the Senegalese industrial fleet, particularly in the absence of an access agreement with the EU (May 2002).

Table 73. Landings and exports (1995 -2000)

Year	Quantities (m. tonnes)				Value 1,000 FCFA	
	Artisanal (mt)	Industrial (mt)	Total (mt)	Exports (mt)	Landings	Exports
1995	266,346	57,271	323,617	103,465	90,122,485	-
1996	327,894	60,865	388,759	107,080	78,613,805	158,844,353
1997	352,929	100,254	453,183	112,148	112,801,880	-
1998	325,149	83,772	408,921	109,487	116,875,979	174,195,145
1999	313,637	81,324	394,961	124,338	107,914,327	185,435,068
2000	338,209	52,047	390,256		87,206,939	

Source: DOPM

The industrial landings are made almost exclusively in Dakar (Senegalese vessels also land in Gambia and Conakry. There is a limit on industrial fishing licences and no new licences have recently been issued, although there have been some changes in the trawl mesh sizes authorised for certain vessels. A complex system of over 30 fishing zones limits fishing activities. Bycatch is a problem in several of the trawl fisheries. The introduction of bycatch excluder devices is suggested. To date no trials have been made with such devices.

10.4. FISHERY PROTECTION

10.4.1. Capabilities

In numerical terms, the combined staff resources of the DPSP, the Navy, Air Force and DOPM are probably adequate for the MCS tasks. However, continued investment in training is required and in the absence of further recruitment, the DPSP will need to continue to be reinforced by secondments from the Navy and assistance from DOPM staff at field level.

Vessels and aircraft. If fully operational, the existing navy patrol vessels are largely adequate for fisheries protection. The principal constraint is the lack of funds for operation, maintenance and repair. A more cost-effective vessel with characteristics similar to Mauritania's "ARGUIN" may be an ideal choice for any new vessel. One DCH-6 « Twin-Otter » is the property of the DPSP and operated by the Air Force. Ideally the aircraft should be replaced, but a major airframe overhaul will take place in mid-2002 adding several years of life to the aircraft. The Air Force has a strong flying and ground support team.

Table 74. Senegalese Navy's patrol vessels*

Name (date construction)	Ndjambuur (1982)	Fouta (1987) (Osprey 55)	Popenguine (1974)	Podor (1977)	Sénégal II (1978)
Length (m)	58	54,75	48	48	27
Speed (kn)	32	20	19	19	18
Autonomy (days)	10	10	10	10	6
Crew/ passengers	35/8	35/17	25/5	25/5	12/2
Cost/ day	3,19 MCFA/ jour		2,27 MCFA/jour		1.76
Condition / financing of repair	Under repair return June/ July 2002 (Coop.Française)	To be repaired in Dakar/ Senegal	Operational	Repair budgeted (Senegal)	Operational

Source : La Marine. *Three smaller vessels (Saint Louis, Siné Saloum II, and Casamance II) are not operational and will be disarmed.

Coastal stations. Ten⁹⁷ coastal stations exist, most equipped with radar. They are an essential component of the MCS system both for surveillance of industrial vessels (zone incursions) and in relation to the artisanal fisheries. In one station over 80% of the officer's time is spent resolving disputes among the artisanal fishermen, and/ or between fish buyers. As the geographical, social, and fishing conditions vary greatly from one site to another, site specific MCS plans are required.

10.4.2. Activities

Artisanal fisheries are subject to few controls and they are rarely applied. There are virtually no limits on effort, other than certain local 'community' regulations applied at a limited number of landing sites (e.g., Kayar, Yoff, Mbour). It is strongly suggested that effective registration⁹⁸ of pirogues is fundamental to control of the artisanal fisheries and should be a central focus of control efforts at the local level. The registration can assist in the following ways:

- Control of fishing effort through facilitating local organisations in their efforts to regulate fishing, including control of fishing zones and authorised fishing gears;
- Conflict resolution between fishermen, or groups of fishermen;
- Payment for services, parking of pirogues, use of auction / sales floors;
- Control of seaworthiness and safety of pirogues, and qualification of skippers and crews;
- Monitoring movements of pirogues; and
- Collection of statistical information and registration of landings.

Industrial fisheries. The principal focus of MCS effort has been on the industrial fisheries. The violations detected most frequently are the entry into the zones reserved for artisanal fishermen and trawl mesh violations. Given the existing level of surveillance the probability that a vessel will be arrested is low. The level of fines and the actual payment of fines is such that the dissuasive effect is very weak.

Quayside controls. The DPSP plans to upgrade the inspection capacity in the Port of Dakar in close collaboration with the port authority, customs, police, DOPM, CRODT and the BCPH (fish quality control). Currently the returns made by vessels to the port authority through the customs are the primary source of landings information. The catch/ landings estimates (landings declarations) made by skippers tend to greatly underestimate the 'verified', weighed landings submitted to the customs (the manifest upon which port dues are paid). The DPSP's port brigade can play an important role in the sub-region by assisting other countries to verify and crosscheck landings made in Dakar by vessels licensed to fish in other sub-regional countries.

Observers. Used primarily for supervision of the EU fleet, a limited number of observers are also placed on Senegalese vessels and 'ramasseurs'. The observers can play a valuable role in the MCS system, but additional support from CRODT is necessary to use this potential in a structured manner to address specific resource issues. In the absence of an EU agreement alternative funding for payment of observer salaries is required.

⁹⁷ St –Louis, Fass Boye, Cayar, Mbour, Joal, Djiferé, Kafountin, Cap Skirring. Yoff and Betimti in construction.

⁹⁸ See : Arrête fixant les modalités d'immatriculation et de marquage des embarcations de pêche artisanale. (Arrêté no 05720 du 16/08/1999)

Table 75. Summary of MCS operations by PSPS/ DPSP (1996-2001)

	1996	1997	1998	1999	2000	2001
Port of Dakar (source: Inspection, DPSP)						
No. vessels inspected	213	135	138	118	118	
No. port arrests	29	21	25	20	16	
Estimation of number of vessel entries to fishing port*	2,927	2,927	2,927	2,927	2,927	
No. vessels inspected as % entries to port	7%	5%	5%	4%	4%	
Seagoing surface patrols (Source: La Marine)						
No. vessels boarded /inspected at sea by the Navy	41	102	82	34	na	
No. vessels sighted/ recorded by the Navy	173	353	310	341	na	102
Total no. of days surface patrol	70	66	73	166	166	350
Estimated vessel effort (1,000 boat/days)	35	35	35	35	35	35
Inspections/ sea day (industrial vessels)	0.6	1.6	1.1	0.2	0.2	
Boardings as % of sea days	0.5%	1%	0.9%	1%	1%	0.3%
Sightings/ records as % sea days	0.10%	0.30%	0.20%	0.10%	0.10%	
Aerial surveillance						
Hours	253	240	88	135	na	
No of vessels checked	1,464	1,739	545	na	833	
No. of vessels checked per hour	5.8	7.2	6.2	na	6.2	
Arrests (source: base de donnee 'arraisonnements)						
No. of arrests by the Navy	6	36	19	16	14	12
Arrests as % vessels inspected	14%	16%	18%	17%	14%	
No. of 'arrests' resulting from aerial surveillance	14	16	10	5	1	12
No. of arrests from port inspection (PSPS/ DPSP)	26	7	14	11	27	30
No. of arrests by coastal stations	11	5	6	7	7	8
Total arrests	57	64	49	39	49	62
Number of cases retained for action	34	37	36	31	28	
% cases retained for action	60%	58%	73%	79%	57%	

Table 76. Selected details of violations and sanctions

Motive/ ‘arrest’ agency	Navy	Air	DPSP	Stations	Unknown	Total	%	
Zone (ZI)	78	72	57	86	77	373	51%	
Mesh (MNC)	32		48	0	15	95	13%	
No licence (national) (DL)	13	26	6	0	25	70	10%	
Net obstruction (OBST)	34		27	2	2	65	9%	
No licence (foreign)	23	23	7	1	3	57	8%	
Motive/ year	1995	1996	1997	1998	1999	Total		
Zone (ZI)	32	34	28	23	16	373		
Mesh (MNC)	7	7	5	11	6	95		
No licence (national) (DL)		7	7	1	3	70		
Net obstruction (OBST)	1	7	13	4	4	65		
No licence (foreign)	2		5	6	1	57		
Results/ Sanctions	Paid	Annulled	Warning	Part paid	Not paid	Court	Other	Total
Zone (ZI)	143	60	41	30	14	11	2	301
Mesh (MNC)	27	19	8	9	14	1		78
No licence (national) (DL)	34	5	5	11	4	1		60
Net obstruction (OBST)	14	17	3	6	8	5	3	56
No licence (foreign)	11	30	6	3	2	1	3	56

10.4.3. VMS

About 60 Senegalese vessels are equipped with the Argos VMS system. Operators use the VMS to track their own vessel's movements and to constitute evidence in cases involving conflicts with artisanal fishermen. The DPSP has decided in principle to introduce VMS. The primary objective for VMS is to prevent zone violations. However, substantial amendments will be required to the legislation to make effective use of VMS to prevent zone violations. Particular attention will be required to the question of whether the offence is to be present in the zone (assumption that the vessel is fishing if present in the zone), or to fish in the zone (will VMS evidence, e.g., vessel speed be sufficient evidence). This question is also closely related to the technical capabilities of the VMS system selected.

10.4.4. Coordination of maritime control activities

The need to coordinate and maximise the use of available personnel and surveillance assets of the different ministries is well recognised in Senegal. However, despite some discussions, responsibilities for overall coordination of maritime security tend to remain divided between those responsible for security (armed forces, police), maritime emergencies and search and rescue, marine environment, transport and communications, the port, customs and immigration, and fisheries. The long-term role of the DPSP (or new agency) will require considerable discussion, establishment of protocols regarding interministerial cooperation, and preparation of interministerial plans and appropriate financial arrangements.

10.4.5. Safety at sea

Senegal is probably the most advanced country in the sub-region as regards safety at sea. Some of the existing and proposed initiatives are described below.

Table 77. Conflicts, accidents and sinkings at sea

Year	95	96	97	98	1999*	2000
No. of cases registered	48	66	51	55	197	76
- destruction of fishing gear	36	55	44	50	48	68
- collisions	3	3	3	3	0	6
- sinkings	9	8	4	2	149	2
No. of cases settled		24	22	27	14	19
Loss of human life	33	21	33	32	115	35

*hurricane in 1999.

The existing activities include:

- Provision of lifejackets, radios, and radar reflectors at subsidised prices;
- Improving signal lights – construction of new lights (phares), or placing of lights on existing structures such as water towers, or mosques;
- Establishment of beach safety committees⁹⁹ and provision of information to fishermen;
- Informing pirogue owners of the intended fishing grounds and time of return prior to leaving the beach, or landing site.

Additional activities either planned or under consideration include:

- The establishment of voluntary lifeboat associations (societes senegalaise de sauvetage en mer) in selected pilot areas to: acquire and operate appropriate lifeboats capable of being hunched from the beach through heavy surf, developing a local system of financial support for the operation of the lifeboats, possibly through voluntary contributions, and development and training of a volunteer corps to man the lifeboats and manage schedules of availability of volunteer personnel;

⁹⁹ E.g., in St. Louis a system of warning lights is in place to warn fishermen not to try to land when the swell is considered too dangerous by a committee of elders.

- blending of the traditional systems of 'recherche de pirogue' with modern search and rescue methods at a local level;
- Development of a system of dissemination of meteorological information at landing sites through placing barometers at coastal stations and through regular public radio announcements and through loudspeakers at landing sites;
- Teaching of swimming and beach¹⁰⁰ rescue, and possible re-introduction of sails as an emergency¹⁰¹ form of propulsion; and
- Specific actions in relation to safety on board the 'ramasseurs'.

10.5. KEY ACTIONS IN IMPROVING MCS

The following issues are considered to be the crucial for the establishment of cost-effective MCS:

- Preparation of fishery management plans with an integral MCS component both for the industrial and artisanal fisheries;
- Establishment of mechanisms to limit access in the artisanal fishery;
- Effective application of existing regulations, in particular the payment of fines;
- Decision on the future institutional structure for MCS;
- Acquisition, operation, and maintenance of technically appropriate and cost-effective capital equipment, including aircraft, patrol vessels, and coastal stations;
- Adequate financing of MCS recurrent costs; and
- Continued training of personnel.

Additional issues outside the direct sphere of MCS are also critical for the establishment of cost-effective MCS. These include:

- Coordination of all maritime surveillance capabilities available at a national level under agreed protocols and plans, and the possible establishment of a unified operations control room;
- The establishment of the CLs; and
- Clarification of the long-term institutional and financial arrangements for fisheries research and generation of scientific advice for fisheries management

10.5.1. Fisheries management and MCS plans

The MCS plans need to be closely integrated with fishery management plans (which do not currently exist). These plans are likely to gradually emerge from current studies on the allocation of fishing rights. In the meantime the effectiveness of two main management measures must be questioned: (i) the highly complex zone regulations based solely on biological criteria, without due regard to enforceability; (ii) the enforceability of the trawl mesh regulations and the closely related minimum size regulations and bycatch, which may require greater harmonisation, and the introduction of bycatch exclusion devices (Nordmore grids, or similar). A clear distinction must be made between the MCS and the generation of scientific advice. It is not the role of a fisheries protection organisation to enforcement agency to conduct research. While the DPSP can facilitate the collection and compilation of information needed for the generation of scientific advice through the primary handling of logbooks, observer reports, catch, landings and other records, appropriate this activity must be budgeted and funded by the Ministry.

¹⁰⁰ A high proportion of the accidents occur as (over)loaded pirogues overturn in heavy surf on their return from the fishing grounds.

¹⁰¹ Many accidents occur through running out of fuel as fishermen operate ever farther from their home base.

10.5.2. Effective application of regulations

Without effective application of the sanctions other enforcement activities are worthless. Fines should be paid in full before a vessel is allowed to fish again. It is not the role of the DPSP to finance the fine by allowing delayed, or staggered payments. The difficult financial situation of the fishing industry is appreciated, as is the need for the DPSP to recover debts owed as a result of the non-payment of fines. However, compromise with industry on payment of fines is likely to undermine the entire fisheries enforcement system. Subject to equitable controls, efforts to introduce 'automatic' sanctions for certain violations are strongly supported, in particular the suspension of the fishing licence.

Table 78. Value of sanctions imposed and annual payments received (in million FCFA)

	1998	1999	2000	2001
Value of penalties imposed	93.6	51.0	87.0	65.6
Payments received	17.9	40.0	59.3	16.3

Establishing more appropriate artisanal fisheries regulations and institutional mechanisms for their application remains one of the greatest challenges facing the sector. The registration of the pirogues is seen as essential to the control of the artisanal fisheries.

10.5.3. Future institutional structure for MCS

The establishment of an autonomous MCS agency appears to be necessary to overcome bureaucratic, and financial constraints to effective surveillance. It would be of advantage if the Ministry were to review the experiences in the other sub-regional countries (e.g., Guinea Bissau, Guinea, and Mauritania) before deciding on the role, structure, and funding of an agency.

10.5.4. Stable finance enables effective planning and use of capital investments

Actions to date have tended to concentrate on investment in capital assets without due attention to the recurrent operating costs as long as donor funding is available. A number of such projects are neither technically, or economically appropriate. A realistic appreciation of the recurrent funding availability is necessary before commitment to capital investment. This requires a realistic business plan for surveillance and must include the projected costs of repair and maintenance of the capital assets (patrol vessels and aircraft). Fines and access fees are unstable sources of MCS finance, particularly where costly repair and maintenance is required. Considering the economic value of the sector there is ample justification for the Ministry of Finance to allocate an adequate core budget. Rather than purchasing military assets, it is incumbent on the DPSP and the Navy to acquire patrol capabilities which can operate more economically, and for which much of the repair and maintenance can be carried out locally.

10.5.5. MCS development plans.

An outline investment plan and project was recently prepared for the DPSP, drawing on recent policy statements and previous outlines of MCS plans. Five strategic themes were proposed:

- Introduction and application of appropriate legislation and regulatory measures to support fishery management plans
- Establishment of a suitable institutional framework within the Fisheries Ministry;
- Modernisation and sustainable use of technical capabilities and physical assets ;
- Coordination with other ministries to create synergies, avoid duplication, and make rational use of available human, physical and financial resources ; and
- International and regional cooperation for protection of regional fisheries.

The following table provides an indication of the order of magnitude of the investments and recurrent costs. Funding may be derived from the state investment budget (BCI), fisheries agreements, the 'fisheries

development fund' (CEPIA), licence fees and industry contributions (e.g., for observers and VMS), bank finance for items such as lifejackets, chartering of patrol vessels and aircraft, and from donor contributions. The artisanal fishermen and their organisations are also envisaged to contribute either financially, or in kind.

Table 79. Indicative investment and recurrent costs for MCS in Senegal

Components	€1,000	%
1. Legislative and management framework	344	2%
2. Institutional development	325	2%
3. Modernisation of technical capabilities	19,629	96%
4. National and international coordination	50	0,2%
Provisional estimate of investment	20,348	
Provisional estimate of recurrent costs	4,505	

10.5.6. Sub regional cooperation

To be an effective sub-regional partner, it is essential that Senegal's patrol aircraft and patrol vessel(s) be well maintained and operate cost effectively, that the technical level of the MCS staff constantly improved, and that Senegal continues to play the role of a responsible port state as indicated in the Code of Conduct. Senegalese activities can assist the sub-regional efforts in a number of ways:

- Timely payment of dues/ arrears to the SRFC will help the SRFC to avoid a heavy dependence on project finance for its activities. The SRFC and SOCU encounter constant cash flow problems, which have a serious negative impact on its performance;
- Promote further development of existing institutional mechanisms, in particular the revision of the SRFC Convention on access, to include the expanded minimum terms and conditions of access by foreign vessels¹⁰²;
- Continue the important support for joint maritime surveillance by placing Senegalese patrol vessels and aircraft at the disposition of the sub-region;
- Assist other member countries with technical training as may be required;
- In association with Guinea Bissau and the Joint Authority, develop a fisheries management plan for the common zone, initiate discussions on a management plan for the Gambia/ Sine Saloum shrimp fishery, continue the dialogue with Mauritania on transboundary fisheries, and develop improved control systems for the pirogues fishing outside Senegalese waters;
- Provide a service for other Member States as regards fish landings and port checks on vessels which use the port of Dakar while operating in the waters of other Member States, possibly through contract with the SRFC and/ or the concerned countries;
- Continue and expand the exchange of information with other Member States and the SRFC, in particular sharing experiences on the control of artisanal fisheries and safety at sea for pirogues; and
- Possibly applying available technical skills to resolving the problems at SRFC / SOCU level regarding secure radio communications.

¹⁰² See: Kelleher, K., 2000. *Design of a Sub-Regional access regime for West African fisheries*. Sub-Regional Fisheries Commission and FAO. Dakar, July 2000. FAO/GCP/INT/722/LUX; WWF, 2001. Manuel de Negotiation des Accords d'Acces aux zones de peche. Senegal is already involved in studies regarding the establishment of the sub-regional register and further development of a draft convention on the sub-regional register is available in the current SRFC study of MCS in the region (in press).

11. SIERRA LEONE

11.1. ECONOMIC IMPORTANCE AND STATE OF THE FISHERIES

As the statistical information for Sierra Leone is deficient it is difficult to determine the economic importance of the fishery sector. Fish¹⁰³ constitutes about 70% of the animal protein consumed in the country and per capita consumption is considered to have dropped from a high of 24 kg in the 1980s to a current level of approximately 10 kg. Only an estimated¹⁰⁴ 11% of the landed value of the industrial catch accrues to the Sierra Leone economy, indicating that the industrial fishery is largely an 'offshore' economic activity. One of the priority strategies for Sierra Leone is to harness an increasing proportion of the economic value of the industrial fisheries.

Table 80. Selected economic and fisheries indicators for Sierra Leone

GDP (US\$ billion)	0.64	Continental shelf 200m (km ²)	30,000
GDP growth rate	3.8%	Coastline (km)	320
Agriculture % GDP	47%	Recorded total catch/ landings (2000)	60,255
Population (million) 2000	5	- artisanal catch/landings	45,910
Population growth rate (1999)	3.3%	- industrial catch/ landings	14,345
Per capita income (US\$/yr)	130	Recorded small pelagics catches	35,000
Value of fish production (million US\$)	97	Recorded industrial shrimp catch (2000)	1,505
Fish consumption (kg/capita)	10	Recorded industrial finfish catch (2000)	11,127
fish as % animal protein (1980s)	70%	Recorded demersal finfish catches (2000)	25,000
EEZ (km ²)	160,000	Recorded artisanal production (2000)	45,910

Sources: WB, Megapesca report, MAFMR

The state of the fisheries is not well known. There have been no stock assessments, or comprehensive work on the stocks for several years. The fisheries library and laboratories were destroyed in the civil war. The commonly cited estimates of a fish resource potential is based on biomass and MSY estimates, rather than on economically sustainable levels of fishing¹⁰⁵. The high-value resources are the inshore stocks, such as shrimp, lobster, crab, squid, and prime whitefish (snapper, grouper, bream, sole). These stocks are limited and need to be carefully managed to provide sustainable economic returns.

Large numbers of juvenile fish are harvested by the artisanal fishermen, particularly in small mesh beach seines and 'channel' nets. Similarly, a large proportion of the shrimp trawl by-catch and the demersal trawl catch is comprised of juveniles of commercial species targeted both by the artisanal and industrial fleets. The impact of the trawl fisheries on the demersal stocks available to the artisanal fishermen has never been adequately assessed in the sub-region and would be a valuable scientific exercise. The Banana Is. / Yawri Bay shrimp fishery would be a suitable object of study because of its relatively distinct geography and important artisanal fisheries.

¹⁰³ ADB, 2001. Sierra Leone – Proposal for an ADF loan of UA 10, 000,000 to finance the artisanal fisheries development project.

¹⁰⁴ Kelleher, K., 2000. Fishery Sector Study. Preliminary report ACP/SL49. Megapesca.

¹⁰⁵ The high levels of production recorded by the Soviet fleet in the 1980s was not sustainable. The fishing operations were heavily subsidised through supplies of fuel to Eastern European vessels at below world market prices. Although caught by Sierra Leone-based vessels, only part of those catches recorded as Sierra Leone production in the 1980s, was in fact caught in Sierra Leone waters (pers. comm. Sierra Fisheries Co.)

There are a number of under-utilised resources, which may have a high commercial potential, but commercial exploitation depends on improved shore facilities. These include mangrove crab, bivalve molluscs, shrimp aquaculture, and recreational fishing. Renewed exploitation of the offshore small pelagics may be considered, although some care should be exercised to avoid negative impacts on the artisanal fisheries.

11.2. MCS INSTITUTIONS

The Fisheries Department of the Ministry of Agriculture, Forestry and Marine Resources (MAFMR) has primary responsibility for fishery protection. It should be noted that the Director (not the Minister) is the licensing authority. The Minister is ‘informed’ of the fishing licences issued.

Scientific advice. The Institute for Marine Biology and Oceanography (IMBO) of the University of Sierra Leone is the only institution with a fisheries research capability as the Fisheries Department has no internal capacity for research. There is no formal relationship between the MAFMR and IMBO. A proposed MOU between the IMBO and the MAFMR may be financed through the proposed ADB project.

Shipping register and SAR. Responsibility for the Sierra Leone register of shipping has been transferred from the Customs and Excise to the Sierra Leone Maritime Authority and may assist with pre-licensing inspections of vessels. Safety at sea is the responsibility of the Maritime Administration. Recent incidents have included 2 mysterious sinkings of fishing vessels and one case of arson on board. Records of artisanal incidents have not been compiled.

The Ministry of Defence, and in particular the Maritime Wing (MW), is the only organisation with a maritime patrol capability. An MOU has been proposed between the MAFMR and the Ministry of Defence regarding protection of Sierra Leone waters. The MOU has not been signed but is effectively being implemented (see below).

11.2.1. Coordination and the Joint Maritime Capability.

The MW has proposed the formation of a Joint Maritime Capability (JMC). The details of the JMC are still under consideration and will require government approval. It involves¹⁰⁶ two institutional components: an interministerial coordinating committee and a joint plan for cooperative maritime protection and administration. The purpose of the JMC is: *“To provide Sierra Leone with an efficient and effective ... maritime protection and administration ... to promote investment in and the development of national maritime assets and thereby the prosperity of Sierra Leone”*. The JMC will comprise the Ministries of Defence, Internal Affairs (police, immigration), Finance (customs), Fisheries, Transport and Communications (maritime administration, port authority, aviation).

A range¹⁰⁷ of needs and activities have been identified, including:

- Joint patrols (inshore, offshore and river);
- Joint training;
- Joint operations centre;
- Additional offshore and inshore patrol capability;
- Harbour vessels ;
- SAR capability;
- Communications; and
- New maritime bases, refurbished infrastructure and navigational aids.

¹⁰⁶ AC Pope, 2001. Powerpoint briefing on JMC. Ministry of Defence.

¹⁰⁷ VMS is not under active consideration as few of the conditions necessary for its effective use are present.

The JMC initiative will be financed and resourced through:

- Existing resources and the government's medium term investment programme;
- Revenues from fines, fishing licences, maritime fees, and taxes. Under the MOU between Fisheries and Defence (unsigned) it is proposed to share the revenue from sanctions: 40% to the treasury, 30% to the Ministry for Defence (to finance maritime surveillance), and 30% to Fisheries.
- The ADB Artisanal Fisheries Project (allocation for MCS related investments and activities is not identified in the project document); and
- Donor assistance.

11.3. FISHING ACTIVITIES

Estimated production (based on logbook data for the industrial fleet) is in the order of 60,000 tonnes per year. It is of note that industrial production of small pelagics was recorded as 65,555 in 1991.

Table 81. Estimated fish production 1995 -2000

Year	1995	1996	1997	1998	1999	2000
Shrimp	2,420	2,443	1,989	1,317	1,483	1,505
Lobster & crab	278	353	197	111	157	198
Cephalopods	658	1,069	557	398	537	308
Demersal finfish	9,416	10,612	5,905	5,344	9,442	11,127
Tuna	3,029	1,011	2,010	4,980	3,662	na
Other pelagics	299	1,109	479	467	537	1,061
Total industrial	16,100	16,597	11,137	14,090	15,818	14,345
Artisanal	46,708	46,673	46,656	46,648	46,420	45,910
Total production	62,808	63,270	57,793	60,738	62,238	60,255

Source: Statistics unit MAFMR

Fishing activity is concentrated in the inshore areas, i.e., on the continental shelf which narrows to a thin band towards the Liberian border. In this area trawlers frequently fish to within 100 meters of the shoreline. The main shrimp ground is in Yawri Bay, off Banana Is., and offshore from several important artisanal fishing villages. Gear conflicts between artisanal fishermen and trawlers are frequent as the trawlers fish inshore at night and damage the unmarked fishermen's nets.

Table 82. Industrial fishing licenses issued 1995 -2000 and at 04/2002.

	1995	1996	1997	1998	1999	2000	04/2002
Demersal finfish	11	9	9	8	28	13	7
Shrimp	49	49	20	36	36	34	24
Support vessels*	0	3	3	0	4	4	4
Purse seine	9	3	8	7	7	0	
Longline					1		1
Pelagic trawl						3	
Total	69	64	40	51	76	54	36

Source: Statistics unit MAFMR. * including canoe support and motherships.

Local ownership of industrial vessels is virtually negligible partly due to the logistic difficulties in operating vessels in an economy recovering from war and the poor investment climate.

Table 83. Industrial fishing licences by type of licence and flag state as of 04/2002.

Licence type	G. Bissau	China	Greece	Guinea	Korea	Norway	S/Leone	Total
Shrimper		13			9		1	23
Trawler		2	4		1			7
Carrier/ mothership	1	2	1					4
Longliner						1		1
Pelagic				1				1
Total	1	17	5	1	10	1	1	36

Source: Statistics unit MAFMR.

The minimum licence period is 3-months (increased from 1 month). No limits have been placed on the numbers of fishing licenses issued to the industrial fleets. It is suggested that precautionary total allowable catches be determined based on available indicators and put in effect through limits on the number of industrial fishing licences issued. Licensed industrial vessels have an obligation to deliver catch to the local market. This is often done by transshipment to canoes, which creates problems, including theft and prostitution.

11.4. FISHERY PROTECTION

11.4.1. Violations

The level of illegal fishing in Sierra Leone is high as illustrated by aerial surveillance (see following Box and Table).

Box 10. Results of an aerial surveillance exercise in Sierra Leone

1. Three vessels were apparently fishing without a licence.
2. Out of the 16 vessels fishing in the IEZ, 8 bore no name, or had names covered, or not legible. Many vessels are unmarked, deliberately cover the identification marks, or are marked in a manner inconsistent with the draft regulations. The DFMR must insist that all licensed vessels are correctly marked and the observers must insist that the marks are displayed at all times. No vessel should be allowed to leave port with inadequate markings. The high cost of the aerial surveillance demands effective shore controls. A total of 11 vessels had inadequate markings.
3. The inshore exclusion zone (IEZ) is effectively ignored. Forty five percent (45%), or 16 out of 35 vessels actively fishing were inside the Inshore Exclusion Zone. Either the extent of the zone should be reviewed to make it more realistic and operable, or it should be strictly enforced with strong action taken on the daily observer reports which indicate that vessels operate with impunity inside the IEZ.
4. A longliner JUREL (apparent Cuban registration), was identified fishing without a licence approximately 140 nm south of Freetown in oceanic waters approximately 4000m in depth.
5. In total 18 out of the 35 vessels actively fishing were operating illegally (51%).

Source: Kelleher, K., Results of the Aerial Surveillance missions, 2000. Mega pesca.

Table 84. Reported violations in Sierra Leone 1995 -01/2002

Violation type	SOCU Code	1995	1996	1997*	1998	1999	2000	2001	04/2002
Zone	12		10		1	8	88	35	6
Expired licence	20	1	4	4			31	6	
Vessel marking	29		1	4	1		41	20	1
'Pirate' fishing	55			1					
Transshipment	56				2		1		

Source: SOCU database. During 1997-98 MCS was virtually non-existent because of civil war.

It is clear that three types of violations are frequent (or more accurately, are detected most frequently): zone, vessel marking/ identification, and expired licence. Within the group of vessels with marking

violations there may be numerous 'pirate' vessels. The primary focus of surveillance and enforcement efforts must continue to be coastal trawling. The extent of unlicensed tuna fishing (offshore) is unknown. As Sierra Leone has little capacity to patrol and enforce any offshore tuna fishing (known to be carried out illegally), it is suggested that Sierra Leone make efforts to conclude fishing agreements with all interested parties.

Improved use should be made of all available resources, in particular 'shore' inspections of vessels and transshipment controls, cross-checking systems, radio reporting and improved liaison between the MAFMR, SOCU and the CNSP in Guinea. In particular, no vessel should be allowed to leave port unless properly marked with its radio call sign in accordance with the law.

Sanctions. Administrative fines are generally applied (although a slow court process may also be initiated). Minimum fines range from US\$10,000 to US\$200,000 for 'pirate' fishing. Total fines paid are as follows:

Table 85. Numbers and values of fines, or sanctions 1996 -2000

Year	1996	1997	1998	1999	2000	2001
Number of 'convictions'	11	3	2	4	18	na
Value of fines (US\$)	65,582	10,878	6,114	20,000	101,226	78,000

Source: MAFMR. All fines in 2000 and 2001 were for IEZ (zone) infractions.

Piracy. In addition to the normal maritime security issues, Sierra Leone has had a serious piracy problem, partly as a result of the civil war and general insecurity in Sierra Leone and in the frontier areas of Liberia and Guinea.

Table 86. Profile of piracy in period 3/3/2001 to 3/3/2002 (numbers of incidents)

Total reported incidents	13	Shooting as part of incident	2
Incidents involving military personnel	7	Incidents involving violence and beatings	3
Incidents involving armed civilians	6	Incidents involving loss of life	1
Incidents of stealing	12	By canoes/ pirogues	8
Incidents shooting only	1	By 'official' patrol boats	6
Incidents 'arrest' and release upon 'payment'	6		

11.4.2. Capabilities and activities of the Fisheries Department

The limited capacity of the fisheries administration means that the fisheries regulations are poorly enforced on shore, at sea, or in the transshipment¹⁰⁸ process. The MAFMR has no airborne, or seagoing enforcement capability. A total of six vehicles are assigned to the Department. No uniforms, GPS, walkie talkies, or manuals are available. Two net gauges are available. The Fishery Department has approximately 209 personnel including 30 observers paid directly by the Department. The inspectors are organised into 4 groups of 5 persons for transshipment duties. Under the AFR/013 project 3 aerial observers and 5 chief of maritime missions have been trained, and 14 boarding officers, including 5 naval officers have been trained.

Observers. A total of approximately 100 observers are available for duty on board the industrial vessels, of which about 40 are employed on a casual basis at any one time, i.e., there is significant rotation of observers. Observers are paid 220,000 Le /month (approximately US\$90). Payments are made directly by the Freetown agents of the fishing companies. Arrests can be made on the basis of observer reports, but only a low percentage of the infringements detected by observers are penalised. Additional training of observers is required.

¹⁰⁸ E.g., the Department relies on the company agents to provide transport to the transshipment point.

Radio and radar. Marine House (fisheries headquarters) is equipped with 1 SSB Codan 9780 HF and 2 VHF radios (1 not operational). A second radio (supplied by the AFR/010 project, not operational) has been placed in a separate room adjacent to the radio room. It is suggested that all radios be placed under a single command structure. The occasional need for family to speak privately with observers is recognised, but should not be seen as a reason for dividing responsibilities for communications. Radio operators do not speak¹⁰⁹ French, or Portuguese so that communications with Guinea, or Guinea Bissau are limited. There is radio contact with Tombo, Shenge, Bonthe (navy) and Conakridy. The Freetown port authority has a short range HF radio, but neither the Maritime Administration, or the SL Maritime Authority operate a radio watch. There is no maritime radar, although plans¹¹⁰ for a series of stations have been prepared by the Maritime Wing.

The fisheries administration has virtually no capacity to enforce the artisanal fisheries regulations. Numerous local (traditional, or customary) regulations exist, e.g., regarding the use of beach seines¹¹¹. The landings beaches are 'controlled' for security purposes by locals, often retired fishermen, appointed by the police. These 'beach controllers' maintain some records of violations, conflicts between local fishermen, and incidents with trawlers.

11.4.3. Monitoring activities

Logbooks. Observer reports (logbooks) are the primary source of industrial¹¹² catch and effort information. There is no reason to suspect deliberate falsification as payments for licences / taxes are not catch related, but records may not be complete and inputting of logbook data is more than 6 months in arrears. The following arrangements are recommended for the management of the catch statistics and logbooks:

- It is suggested that skippers rather than observers should be obliged to complete the logbooks, thereby placing an obligation on the vessel owner to supply the required catch and effort information. The task of the observer is to verify that the logbook data is correct. The skipper and the observer should sign the completed logbook;
- Logbooks should be sequentially numbered and issued to the companies in respect of a specific vessel and fishing licence;
- For shrimp vessels the logbook should show the breakdown by species or commercial size, at least in a summary manner, or by sub-sampling (e.g., 1 day in 5). This information is crucial to determining the state of the shrimp stocks and the value of the resource and is not currently available to the administration. This information is already recorded by the vessel skippers for commercial purposes (i.e., calculation of skipper and crew bonuses). Similar sub-sampling should take place for fish on the demersal trawlers with particular attention to the length frequencies of selected indicator species;
- The observer should verify the entries and if necessary maintain an independent record including estimates of discards;
- New logbooks should be started after each transshipment to facilitate cross-checking; and
- The catches recorded in the logbooks should be verified against the transshipment record, and countersigned by both skipper and observer.

Catch statistics. The Industrial Fisheries Database System (IFDaS), a DataEase relational database, is an effective and highly functional means of capturing, compiling and analysing the logbook records. However, the statistics unit personnel have a poor understanding of the nature of relational databases and

¹⁰⁹ Japanese and Russian are more common as a result of previous training opportunities.

¹¹⁰ Possibly located at Yelibuya, Cape Sierra, and Sulima.

¹¹¹ Fishermen have expressed concern over the non-traditional use of 'beach seines' to fish offshore banks.

¹¹² Artisanal catch statistics are compiled separately using the ARTFISH programme.

the need for backup and maintenance. Power shortages means that data input is now substantially in arrears. The MFMR has no other source of summary statistical catch data on the industrial fleet. It is suggested that:

- At least one additional PC be acquired equipped with a CD writer and the data already recorded be backed up in two copies, possibly using either a zip drive, or CD writer and one copy archived outside Marine House for added security.
- Consideration should be given to entering summary logbook data (e.g., total catch, crustacea catch, total effort) in a spreadsheet to provide a week-to week status situation and avoid the backlog in the main data entry;
- The statistics officer(s) should receive additional training in relational database management, and improved use of basic software packages. At least one additional officer trained in the effective use of word processing and spreadsheets should be placed in the statistics unit;
- Technical assistance be provided for system maintenance to be carried out in accordance with the manual (only after a backup is made). Ideally the system should be upgraded without sacrificing its basic simplicity and functionality;
- IMBO be requested to provide an ongoing analysis of the data compiled in the IFDaS system;
- IFDaS total catch data be verified against transshipment returns (it is acknowledged that the software is not designed for this function which may prove difficult).

Radio reports. Daily radio reports are erratic, often due to refusal by the skipper to allow the observer to use the radio (possibly because he is inside the IEZ). This violation may be punished by obliging the skipper to report in person to the Marine House radio room for a number of days, thereby depriving him of fishing time and salary.

11.4.4. Capabilities and activities of the Maritime Wing of the Defence Ministry

Capabilities. The Maritime Wing (MW) is a force of 38 officers and 200 men. Some expansion of the personnel is expected. The defence legislation authorises the MW to detain fishing vessels. The MW is equipped with one 42m Shanghai III class patrol vessel, 2 x Tornado RIBs on trailers¹¹³ fitted with 2 x 60 hp engines, 4 x GRP (approximately 6 meter) open boats with 60-70 hp outboard engines. Additional RIBs are expected as part of UK defence aid. Two Hind helicopters exist but are not normally tasked for maritime surveillance. Basic forward stations, or bases have been established at Yeliboya, Tombo, and Sulima each equipped with HF/ VHF and generators.

Table 87. Characteristics of the Shanghai Class P103, Ali Mammy Rassin

Length (m)	42	Commissioned	1996
Hull	Steel	Operations	Small warship, high cost of operation
Engine type	4 x Stell	Condition	Operational. Radios, GPS, sounder, armament operational
Speed (knots)	12 – 26	Photo available	Yes
Crew	32		

Note: the vessel hull (partially perforated with rust) was completely refurbished at the local Kissi Slipway at a cost of US\$200,000.

Activities. Current level of MCS activity is 3 days/ month offshore patrol and 20 days/ month inshore patrol (RIBs) and is limited by availability of operational funds from the Fisheries Department. Current levels of patrols have resulted in 28 arrests of which 18 resulted in convictions. Arrested vessels are released by the MW only upon receipt of a written request by the Minister. The proposed MOU between the MAFMR and the Ministry of Defence will finance 15 days / month offshore patrol and 20 days/ month inshore patrol.

¹¹³ Almost new at UK£15,500 each.

Hot pursuit arrangements with Guinea are operational. Because of the high incidence of piracy in previous years armed navy personnel were placed on board all fishing vessels. This practice has now ceased.

11.4.5. Regional cooperation

The Sierra Leone Cabinet has already approved the request for SRFC membership. The current regional cooperation through the SRFC/ Lux/ FAO project is largely restricted to aerial surveillance, training communications and information systems. A limited seagoing capability is required working in close association with the aerial surveillance. Language continues to be a major impediment to effective communications between Sierra Leone and the other Member States of the SRFC. Future MCS projects should include a language training component.

11.4.6. Legal issues

In general, the Fisheries (Management and Development) Act, 1994 is well drafted and contains most of the necessary provisions required to conduct effective fisheries management and to control fishing related activities. While current functioning appears to be effective, a more balanced sharing of powers and responsibilities between the minister and the director may be of merit.

With respect to Sierra Leone's obligations under the Law of the Sea Convention, no baseline survey has been conducted, and no charts and geographical co-ordinates have been given due publicity and deposited with the Secretary General of the United Nations, as required in the Convention. Short-term donor assistance would be of use to conduct a baseline survey. Sierra Leone has no maritime boundary delimitation agreements with either Liberia or Guinea and steps should be taken towards negotiation of such delimitation agreements. International fisheries instruments¹¹⁴ should be ratified and provisions made for their implementation.

11.4.7. Financing MCS

A proportion of the revenue from fines is already paid into an account for the Fisheries Department but bureaucratic constraints have prevented effective drawdown to date. Licence fees totalled 2.5 billion Leone's in 2001 (US\$ 1.1 million) and allocating a proportion of the licence fees to the fisheries account would make MCS financing more stable and independent of fines revenues. Government financial procedures also constrain direct collection¹¹⁵ of observer fees and payment of observers by the Fisheries Department.

11.5. IMPROVING MCS

A range of recommendations and suggestions have been presented in the above sections. In particular, consideration can be given to establishing fishery management plans, determining precautionary levels of effort and limiting the number of licences issued.

A comprehensive institutional development project is required to equip the Fisheries Department and establish coastal stations which can serve a multi-purpose role of artisanal fisheries support and MCS in close cooperation with the Maritime Wing. The proposed ADB project meets few of the MCS requirements.

¹¹⁴ The Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; and The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (the "FAO Compliance Agreement").

¹¹⁵ This problem is common to several Member States, i.e., revenues collected by government must be paid to the treasury and can only be recovered through the recurrent budget. Sierra Leone is aware that direct payment of observers by the fishing companies is undesirable, but a suitable alternative is not readily apparent.

The JMC business and strategic plan should be further developed and assisted by donor interventions, with particular regard to establishing and equipping the coastal stations, communications and radar, and developing a cost effective surface patrol capability, and a substantial training component.

A major problem remains the financing of presence at sea, particularly in the offshore areas considering the high cost of operating the offshore patrol vessel. Consideration can be given to using sanctioned fishing vessels as patrol platforms, i.e., in addition to the fine, the operator is obliged to place the vessel at the disposal of the fisheries authorities/ Maritime Wing for a certain time.

Human resource development remains weak and continued training is required at all levels. Sub-regional assistance may be required to address MCS issues which pertain to non-SRFC countries, e.g., Liberia, and Gulf of Guinea countries. A coastal radar facility, operated jointly with Guinea and located in a strategic frontier area, can also be considered by the parties.



ANNEX I. REVISED DRAFT PROPOSAL FOR THE ESTABLISHMENT OF THE SUB-REGIONAL REGISTER AS AN EFFECTIVE SUB-REGIONAL LEGAL INSTRUMENT

Article 1. Purpose, establishment and maintenance

1. The Permanent Secretary (PS) of the SRFC shall establish and maintain a Sub-Regional Register (SRR) of fishing vessels as a legal instrument for the purposes of improving control over the activities of certain fishing vessels and vessels associated with fishing activities.
2. The Council of Ministers (“the Council”) retains the primary responsibility for providing general policy and administrative guidance for the operation of the SRR and shall meet from time to time to review the operation of the SRR.
3. The Council delegates to the Permanent Secretary the responsibility for detailed administration of the SRR according to such guidance as the Council may provide.
4. The SRR shall be established and operated under the terms and conditions set out hereunder.

Article 2. Vessels subject to registration

1. The following vessels shall be subject to registration:
 - d) all foreign-flag vessels, meaning vessels which fly the flag of a non-Member State, which are licensed to fish in the waters of the Member States;
 - e) all decked vessels over 24 meters LOA which fly the flag of a Member State and fish in waters other¹¹⁶ than those of the flag state;
 - f) all refrigerated cargo vessels (reefers) which collect, or tranship fish from any vessels fishing in the sub-region;
 - g) all support vessels, including those which supply fuel, water, ice, fishing gear, packaging materials, food, or ice, and vessels which facilitate crew exchange, or which support canoes fishing operations;
 - h) all decked fishing vessels over 24 meters LOA which fish on the high seas¹¹⁷ and use the ports of a Member State for the purposes of refuelling, or unloading of catch.
2. The PS may determine whether, or not a vessel meets the criteria for registration. In the event of dispute regarding the interpretation of these criteria, the PS shall inform the Council of the decision and the rationale for the determination.
3. The following vessels are exempt from registration: canoes, pirogues, artisanal fishing vessels, and undecked vessels below 24 meters LOA collecting by-catch, or assisting industrial vessels to fulfill local landing requirements.

Article 3. Initial register compilation procedures

1. Based on the criteria in Article 2, Member States shall propose to the PS the list of vessels for inclusion in the SRR and indicate the basis upon which each vessel meets the criteria.

¹¹⁶ E.g., A Senegalese vessel fishing in Brazil would be required to register.

¹¹⁷ E.g., Tuna vessels which may not be licenced in the sub-region.

2. Following verification that the vessel meets the criteria for inclusion on the SRR, the PS shall include the vessel on the SRR. In the event of queries, or disputes, following a dialogue with the Member State(s) involved, the PS shall make a determination regarding the vessel.

Article 4. Notification of vessel owners, or operators

1. Within 12 months of the completion of initial register compilation procedures for all Member States (Article 3), the PS shall:

- a) provide owners, operators, charterers, or agents (the “operator”) with full information on the operation of the register;
- b) advise operators that for the purposes of acquiring a fishing license in the sub-region, the vessel is required to be duly registered and have responsible status on the SRR;
- c) provide each operator with a copy of the information contained in the register regarding the vessel(s) of the operator;
- d) request that each operator verify the information and ensure that the information contained in the register is valid and remains valid;
- e) advise operators that invalid information may lead to removal of responsible status; and
- f) advise operators that direct registration shall be required after a certain date.

2. In coordination with the PS, each Member State shall notify the governments, associations and operators responsible for the operation of fishing vessels which meet the registration criteria of the requirement of registration on the SRR as a condition of licensing, and that any fees which may be required are the administration costs and have no bearing on licence or access fees.

Article 5. Direct registration

1. After a date to be determined by the Council upon the advice of the PS, all vessels shall be required to register directly to the SRFC. Registration shall be an annual requirement and shall expire on 30 June of each year. Applications for direct registration may be made at any time, but in no case shall the period of validity of that registration extend beyond 1 July following the date on which the application was made. Applications for first registration shall be made in the form prescribed in Annex 2. Any information required to be recorded, or to be notified, communicated or reported shall be true, complete and correct. Any change in circumstances which has the effect of rendering any such information false, incomplete or misleading shall be notified to the PS in writing immediately.

2. In order to facilitate the registration process, the PS may permit block registration by recognised national fishermen’s associations, or government agencies, subject to agreement with these agencies.

3. The Council may specify an annual registration fee to cover the costs of administering the register and to provide additional revenue for the SRFC.

4. Applicants wishing to maintain their registration shall, where there has been no material change in the information provided in the original application, and unless otherwise required by the PS, submit an application for renewal in the form prescribed in Annex 3 before 1 July each year. In all other cases, including where the application for renewal is received later than 1 July, applications for renewal shall be dealt with for all purposes as applications for direct registration under paragraph 1.

Article 5. Responsible and delinquent vessels and their licensing

1. Upon initial registration, the PS shall accord all vessels 'responsible' status.
2. A vessel which loses responsible status shall be considered 'delinquent'.
3. No Member State shall issue a fishing licence to a vessel which has delinquent status on the register. All Member States shall make appropriate legislative and administrative provisions to give effect to this Article.

Article 6. Removal of responsible status

1. The vessel may be deemed 'delinquent' in the event that:
 - a) evidence exists that gives reasonable cause to believe that the operator has committed a serious offence against the fisheries laws or regulations of a Member State and it has not been possible to bring the operator to trial; or
 - b) repeated offences of a serious, or very serious nature as may be determined by the Council from time to time; or
 - c) submission of false SRR information, or failure to inform of changes to the vessel which affect SRR information (Article 5.1).
2. In relation to paragraph (c), the PS shall automatically remove responsible status. The PS may propose to the Council the removal of responsible status under paragraph (b).
3. With respect to paragraphs (a) and (b), a Member State may propose the removal of responsible status for a vessel by addressing that request, with supporting documentation, to the PS for distribution to all Member States and further action as specified in Annex 1. The supporting documentation should include evidence of the alleged violation (s), a response, if any, to the evidence by the vessel operator, and a record of efforts taken by the member country to obtain satisfaction. Prior to making such a request, the Member State shall have fully investigated the alleged violations(s) and have made every effort to obtain an explanation from the vessel operator concerned.
4. Approval of a request for removal of responsible status shall require endorsement from three or more Member States and no dissenting responses.
5. Upon the removal of responsible status Member States shall suspend without compensation any fishing licence held by the vessel.

Article 7. Reinstatement of responsible status

1. Delinquent vessels shall be restored to responsible status only upon completing the required corrective action to the satisfaction of the Member State requesting suspension, a favourable response from three or more member countries and no dissenting response, and the completion of the normal registration requirements.
2. Responsible status, lost as a result of failure to provide accurate and timely vessel information, may be restored upon submission of accurate registration information to the PS.
3. The PS shall notify all member countries and the vessel operator of the reinstatement of responsible status for a vessel.

Article 8. Communications, transparency and security

1. The SRR shall contain such information as will clearly identify a vessel even in the event of changes of ownership, flag and name.
2. In the interests of transparency, selected information contained in the SRR may be made public through web pages, or other means in accordance with the directives of the Council.
3. The PS shall take measures to ensure the security of the SRR databases and shall provide full access by Member States to the information contained in the SRR.
4. Additional vessel information databases may be maintained by the SRFC, but shall not form part of the SRR unless specified by the Council.

Article 9. Administration (financing needs to be addressed)

1. The personnel required to administer the SRR shall be recruited through open competition and in accordance with the internal regulations of the SRFC.
2. Each Member State shall appoint a national contact point for the SRR, who will be responsible for all communications with the PS regarding the SRR. In the absence of the contact point, the national director of fisheries shall be the responsible person.

Articles 10 - Final clauses

Signature, ratification, Entry into force, Denunciation, Revision and amendment, Depositary

Annex 1. Administrative procedures for removal of responsible status (refer Article ...)

The PS shall immediately copy and distribute to all member countries a request for removal of responsible status, and supporting documentation, and notify the vessel operator that a request for withdrawal of registration is being considered by the Member States.

Member States shall immediately notify the PS of the date of receipt of a request for removal of responsible status. Member States should use their best efforts to respond to notification of a request for withdrawal of registration within 14 days of such notification.

The PS shall notify all Member States when three or more Member States have endorsed a request for withdrawal of registration, indicating that withdrawal of registration shall become effective on a specific date not earlier than 14 days after the date of such notice, unless an objection from a member country to that action is received by the PS before that date.

Any Member States that objects to the proposed withdrawal of registration shall make known the fact of its objection and the reasons therefore to the PS in writing. The PS shall notify the requesting country of the objection and shall invite the requesting country and the objecting country to reconsider the request for withdrawal. The requesting country and objecting country shall notify the PS of their consultations and shall inform the PS whether or not to proceed with the withdrawal of registration.

The PS shall notify all member countries and the vessel operator when the withdrawal of responsible status will become effective.

Annex 2. Initial registration form

The “Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas”, Art IV paragraphs 1 and 2 give a list of the minimum information which should be included in the SRR.

The following form has been adapted from that used by the FFA for the VMS register.

Name of Vessel _____ Date ____/____/____
 If this vessel was registered before, specify: Old vessel name _____
 Old registration number _____ Old call sign _____

Vessel Owner Name _____ Vessel Charterer Name _____
 Address _____ Address _____

Country of Registration _____
 Country of Registration Number _____
 International Radio Call Sign _____
 Vessel insurance: _____ (Company name /contact) _____ (Policy No.)
 Is a VMS (satellite tracking device) fitted yes ___ no ____ . If yes, give make, model, and reference number: _____

Operational Base(s):
 Port 1 _____ Country 1 _____
 Port 2 _____ Country 2 _____

Vessel Master: Fishing Master:
 Name _____ Name _____
 Address _____ Address _____

Vessel Type:
 Demersal trawler ___ Pelagic trawler ___ Pot/ trap fishing ___ Purse Seiner ___ Longliner ___
 Purse Seine Carrier ___ Pole and Liner ___ Reefer vessel ___ Support/ supply vessel ___ Bunker ___
 If other, specify _____

Number of Crew _____ Flag/State of Authorised Fishing Area _____
 Hull Material: Steel ___ Wood ___ FRP ___ Other ___ If other, specify _____

Year Built _____ Place Built _____ Gross Tonnage _____
 Overall Length _____ meters Beam (width) _____ meters Moulded depth _____ meters
 Classification society Name _____ Reference no. _____
 Main Engine(s) Power (specify units) _____ Fuel Carrying Capacity _____ kilolitres

Daily Freezing Capacity (more than one, if appropriate):

Method	Capacity (Metric tons/24 hours)	Temperature (°C)
Plate:	_____	_____
Brine	_____	_____
Air (Blast)	_____	_____
Air (Coils)	_____	_____
If other, specify	_____	_____

Storage Capacity (more than one, if appropriate):

Method	Capacity (Cubic meters)	Temperature (°C)
Ice IC	_____	_____
Refrigerated Sea Water	_____	_____
Brine	_____	_____
Air (Coils)	_____	_____
If other, specify	_____	_____

Complete either A, B, C, D, E, or F below as appropriate.

A. For trawler

Normal trawl target species: Shallow-water shrimp ____
 Deepwater shrimp ____ Demersal fish ____ Cephalopods ____ Small pelagics ____
 Other (specify) _____
 Number of trawls normally used simultaneously: 1 ____ 2 ____ 4 ____
 Maximum length of trawl warp (trawl wire) _____ meters
 Number and power of trawl winches: ____ number ____ power specify units ____

B. For Purse Seine Vessels:

Net Length (meters) _____ Net Depth (meters) _____
 Support Craft:
 Name 1 _____ Type 1 _____
 Name 2 _____ Type 2 _____

C. For Pole and Line Vessels:

Number of automatic poling devices (0 if none) _____
 Bait Storage (more than one, if appropriate) _____
 Circulation Method (X where appropriate) Capacity (Cubic meters)
 Natural NN _____ Circulation _____ Refrigerated _____

D. For Longline Vessels:

Average number of baskets _____ Mainline length Km _____ Average number of hooks per basket _____
 Main line material _____

E. Trap vessels:

Normal target species _____ Number of traps _____

F. For Support Vessels:

Activities (more than one, if appropriate) _____
 Refrigerated Carrier ____ Bunker (refuelling) vessel ____ Supply vessel (other than fuel) ____ Canoe support ____

If other, specify _____

Fishing Vessel(s) Supported _____

I declare that the above information is true and complete. I understand, I am required to report any changes to the above information within 60 days, and further understand that failure to do so may affect responsible status on the Sub- Regional Register.

Applicant:

Name _____ Signature* _____
 Address _____ (OWNER, CHARTERER, or
 _____ DULY AUTHORISED AGENT)

FAX. No. _____ TEL. No. _____ TELEX No. _____

*Affix official stamp of the applicant.

Annex 3. Renewal of registration form

I declare that the above information submitted on the ... (date of previous registration) ... is true and complete. I understand, I am required to report any changes to the above information within 60 days, and further understand that failure to do so may affect responsible status on the Sub- Regional Register.

Applicant:

Name _____ Signature _____
 Address _____ (OWNER, CHARTERER, or
 _____ DULY AUTHORISED AGENT)

FAX. No. _____ TEL. No. _____ TELEX No. _____